DYEING AND FINISHING TEXTILES.

GENERAL STATISTICS.

Scope of the industry.—This report presents statistics for all establishments engaged, primarily, in the dyeing and finishing of textiles. It covers the bleaching, dyeing, and mercerizing of raw fibers, of yarns, and of woven cloth, and the printing, finishing, "rubberizing," "waterproofing," etc., of piece goods, and it also includes establishments engaged in the processing, converting, beaming, and winding of yarns and in the spooling of thread, as well as a few establishments engaged in dyeing and bleaching straw braids. Although some establishments make a specialty of dyeing and finishing silk yarns and fabrics, and a number specialize in work on other classes of textiles, those that dye and finish more than one variety of fabric are so numerous that it is impossible to compile statistics which will correctly represent the work done on any particular material.

A considerable number of the cotton, silk, and woolen mills carry on in the same establishments one or more of these subordinate processes in connection with the manufacture of textiles. Where practicable, separate returns were secured for the dyeing and finishing departments of such mills, in which case these departments were treated as separate establishments in compiling statistics for this report.

Most of these mills, however, made no separate report for the dyeing and finishing department, the operations of the entire establishment being covered by a single report. The statistics for the dyeing and finishing industry, therefore, do not fully cover the dyeing and finishing operations carried on in connection with the textile industries.

Comparison with earlier censuses.—Statistics for the dyeing and finishing industry were first obtained at the census of 1849, when 42 establishments were reported, giving employment to an average of 4,080 operatives. The returns for cost of materials and value of products included the value of the cloth treated and are therefore not comparable with those for later censuses, but the value added by manufacture was $3,218,761. At the census of 1859 there were 29 establishments engaged in the industry, giving employment to an average of 4,005 operatives and reporting products to the value of $7,971,064; the value added by manufacture was $4,086,249. At the census of 1869, 42 establishments, employing an average of 8,894 operatives, were reported. The value of the cloth treated was included in the value of products at this census also, but the value added by manufacture amounted to $8,072,686. In 1879 there were 191 establishments employing 16,698 operatives, while the value of the product, or work done, amounted to $32,297,420 in that year, the value added being $18,633,125.

Table 1 summarizes the statistics for the industry for each census from 1889 to 1914, inclusive, and gives percentages of increase.

Table 1

	NUMBER OR AMOUNT.					PER CENT OF INCREASE.[1]			
	1914	1909	1904	1899	1889	1909–1914	1904–1909	1899–1904	1889–1899
Number of establishments	507	426	360	298	248	19.0	18.3	20.8	20.2
Persons engaged	53,273	47,303	38,071	31,394	(2)	12.6	24.2	21.3	.....
Proprietors and firm members	353	318	310	300	(2)	11.0	2.6	3.3	.....
Salaried employees	4,453	2,939	2,196	1,318	(2)	51.5	33.8	66.6	.....
Wage earners (average number)	48,467	44,046	35,565	29,776	19,601	10.0	23.8	19.4	(3)
Primary horsepower	130,172	107,746	84,868	69,238	57,035	20.8	27.0	22.6	21.4
Capital	$139,193,871	$114,092,654	$88,708,576	$60,643,104	$38,450,800	22.0	28.6	46.3	57.7
Salaries and wages	31,343,723	26,261,634	18,876,586	14,993,444	9,717,011	19.4	39.1	25.9	54.3
Salaries	6,471,405	5,034,710	3,407,381	2,267,128	(2)	28.5	47.8	50.3	.....
Wages	24,872,318	21,226,924	15,469,205	12,726,316	(2)	17.2	37.2	21.6	.....
Paid for contract work	222,370	337,422	92,885	41,735	(2)	−34.1	263.3	122.6	.....
Rent and taxes (including internal revenue)	1,412,795	847,216	[4] 812,903	[4] 427,049	(2)	66.8	.....	.....	.....
Cost of materials	56,705,135	35,261,301	19,621,253	17,958,137	12,385,220	60.8	79.7	9.3	45.0
Value of products	109,291,536	83,556,432	50,849,545	44,963,331	28,900,560	30.8	64.3	13.1	55.6
Value added by manufacture (value of products less cost of materials)	52,586,401	48,295,131	31,228,292	27,005,194	16,515,340	8.9	54.7	15.6	63.5

[1] A minus sign (−) denotes increase. [2] Figures not available. [3] Figures not strictly comparable. [4] Does not include internal revenue.

The number of independent dyeing and finishing establishments shows a considerable increase for each of the intercensal periods covered by the table, the number in 1914 being more than twice that in 1889. There was a substantial increase in value of products during each of the decades between 1889 and 1909, as well as during the five years from 1909 to 1914. The period of greatest progress, however, was from 1904 to 1909, when the relative gain in each of the more important items in the table was far in excess of that shown for the latter half of the last decade. In general, the cost of materials consists chiefly of the amount expended for dyestuffs and other chemicals and the value of products represents the amount which is charged for performing the dyeing and finishing processes, the goods dyed or

finished in most instances belonging to other concerns. In some instances, however, the goods dyed or finished are owned by the establishments which perform these final operations and under such circumstances the cost of the fabric is included in the cost of materials, while the value of the finished cloth is included in the value of products. The large increases in cost of materials and value of products shown for the five-year periods, 1904–1909, and 1909–1914, therefore, may be due in part to the fact that a larger proportion of the value of the fabrics treated was included in the cost of materials in 1914 and 1909 than in 1904.

Summary, by states.—Table 2 summarizes the more important statistics of the industry by states, the states being arranged according to the value of products reported for 1914. The states shown in this table are given their actual ranking among all states, the rank of certain states for which figures can not be presented being higher than that of some enumerated in the table. The extent to which the establishments in the several states owned the materials upon which they worked greatly influences their rank in value of products, and no doubt largely accounts for the seeming discrepancy between the proportion of the total value of products contributed by certain states as compared with the proportion which the same states contributed of the total number of wage earners, or the value added by manufacture.

Table 2

STATE.	CENSUS OF 1914. Number of establishments.	Wage earners. Average number.	Wage earners. Per cent distribution.	Wage earners. Rank. 1914	Wage earners. Rank. 1909	Value of products. Amount.	Value of products. Per cent distribution.	Value of products. Rank. 1914	Value of products. Rank. 1909	Value added by manufacture. Amount.	Value added by manufacture. Per cent distribution.	Value added by manufacture. Rank. 1914	Value added by manufacture. Rank. 1909	PER CENT OF INCREASE.[1] Wage earners (average number) 1909–1914	1904–1909	1899–1904	Value of products. 1909–1914	1904–1909	1899–1904	Value added by manufacture. 1909–1914	1904–1909	1899–1904
United States	507	48,467	100.0	....	....	$109,291,536	100.0	....	....	$52,586,401	100.0	....	....	10.0	23.8	19.4	30.8	64.3	13.1	8.9	54.7	15.6
New Jersey	98	11,683	24.1	1	1	27,986,512	25.6	1	2	14,280,512	27.2	1	2	15.3	33.3	7.4	77.2	31.9	14.2	51.2	36.3	15.9
Massachusetts	57	11,437	23.6	2	2	22,455,086	20.5	2	1	11,466,083	21.8	2	1	26.0	20.9	60.5	2.6	98.1	24.6	0.4	66.3	19.3
New York	99	5,514	11.4	5	5	16,302,576	14.9	3	5	5,850,598	11.1	5	5	5.0	46.5	15.0	68.5	121.8	20.2	5.7	83.1	35.9
Rhode Island	47	7,928	16.4	3	3	16,300,783	14.9	4	3	7,536,480	14.3	3	3	1.7	3.0	27.3	16.8	39.8	17.6	−12.7	36.2	17.5
Pennsylvania	150	6,389	13.2	4	4	15,451,576	14.1	5	4	6,995,888	13.3	4	4	5.0	32.7	−2.8	28.1	77.7	−3.6	4.0	64.7	5.7
Connecticut	12	1,764	3.6	6	6	3,503,139	3.2	6	6	2,048,153	3.9	7	6	2.6	22.3	8.2	−1.7	60.8	−2.4	−1.6	61.6	−5.5
Ohio	5	382	0.8	9	11	705,618	0.6	8	10	262,033	0.5	10	12	107.6	.....	.....	66.8	.....	.....	45.3	.....	.....
Illinois	8	268	0.6	10	12	504,199	0.5	10	11	296,405	0.6	9	10	55.8	39.8	.....	39.0	125.5	317.2	15.2	96.9	.....
Kentucky	3	116	0.2	15	....	247,326	0.2	14	....	138,338	0.3	13	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maryland	4	87	0.2	18	17	204,710	0.2	16	17	108,035	0.2	17	17	.....	.....	.....	61.7	.....	.....	.....	.....	.....
North Carolina	4	194	0.4	11	10	203,379	0.2	17	13	97,869	0.2	16	11	−41.2	9.6	63.6	−33.7	22.3	42.6	−49.6	17.6	.....
All other states	20	2,705	5.6	....	....	5,426,632	5.0	....	....	3,506,007	6.7	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....

[1] Percentages are based on figures in Table 11. A minus sign (−) denotes decrease. Percentages are omitted where base is less than 100 for wage earners or less than $100,000 for value of products or value added by manufacture.

Five states—New Jersey, Massachusetts, New York, Pennsylvania, and Rhode Island combined—reported 89 per cent of the number of establishments, 88.7 per cent of the wage earners, 90 per cent of the value of products, and 87.7 per cent of the value added by manufacture.

New Jersey ranked first in 1914 in number of wage earners, value of products, and value added by manufacture, having passed Massachusetts in value of products since 1909; in 1904 New Jersey ranked first in each respect.

Persons engaged in the industry.—Table 3 shows, for 1914 and 1909, the number of persons engaged in the industry distributed by sex, the average number of wage earners being distributed also by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

The total number of persons engaged in the industry in 1914 increased by 5,970, or 12.6 per cent over 1909. The number of women employed as clerks in 1914 was nearly double that reported in 1909, and their proportion of the total of this class increased from 21.8 per cent to 26.2 per cent. The average number of wage earners increased by 4,421, or 10 per cent. More than four-fifths of the wage earners were males—practically the same proportion as in 1909. A small and decreasing number of children were employed as wage earners.

Table 3

CLASS.	Census year.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Male.	Female.	Per cent of total. Male.	Female.
All classes	1914	53,273	43,654	9,619	81.9	18.1
	1909	47,303	38,581	8,722	81.6	18.4
Proprietors and officials	1914	1,495	1,460	35	97.7	2.3
	1909	1,218	1,190	28	97.7	2.3
Proprietors and firm members	1914	353	338	15	95.8	4.2
	1909	318	308	10	96.9	3.1
Salaried officers of corporations	1914	424	412	12	97.2	2.8
	1909	289	287	2	99.3	0.7
Superintendents and managers	1914	718	710	8	98.9	1.1
	1909	611	595	16	97.4	2.6
Clerks and other subordinate salaried employees	1914	3,311	2,444	867	73.8	26.2
	1909	2,039	1,595	444	78.2	21.8
Wage earners (average number)	1914	48,467	39,750	8,717	82.0	18.0
	1909	44,046	35,796	8,250	81.3	18.7
16 years of age and over	1914	47,692	39,221	8,471	82.2	17.8
	1909	43,002	35,057	7,945	81.5	18.5
Under 16 years of age	1914	775	529	246	68.3	31.7
	1909	1,044	739	305	70.8	29.2

The average number of wage earners employed in the industry in 1914, 1909, and 1904 is given for each state in Table 11. The distribution of the average number by sex and age is not shown for the individual states, but Table 12 gives for 1914 such a distribution of the number employed on December 15, or the nearest representative day. Female wage earners were reported from all of the 11 states shown in the table, the largest number, 2,051, from Massachusetts and the next largest number, 1,701, from New Jersey.

Wage earners employed, by months.—Table 4 gives, for 1914 and 1909, the total number of wage earners employed in the industry on the 15th of each month, or the nearest representative day, for each state in which the average number of wage earners was 500 or more, together with the percentage which the number for each month forms of the greatest number reported for any month.

Table 4

WAGE EARNERS: 1914 AND 1909.
[Month of maximum employment for each state is indicated by boldface figures and that of minimum by *italic*.]

STATE.	Census year.	Average number employed during year.	Number employed on 15th day of the month or nearest representative day.											Per cent minimum is of maximum.
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States	1914	48,467	49,059	50,369	**51,070**	50,815	49,681	49,291	47,915	46,981	48,007	47,662	*45,253*	45,501	88.6
	1909	44,046	43,715	44,299	**44,863**	44,635	43,840	43,405	*43,212*	43,447	44,171	44,031	44,797	44,157	96.3
Connecticut	1914	1,764	1,780	1,786	1,790	1,743	1,752	1,781	1,781	1,742	*1,725*	1,819	1,740	1,729	94.8
	1909	1,719	1,720	1,716	1,754	**1,768**	1,738	1,735	1,700	1,688	*1,679*	1,704	1,701	1,730	95.0
Delaware	1914	1,305	**1,399**	1,379	1,385	1,392	1,391	1,339	1,335	*1,123*	1,210	1,269	1,253	1,180	80.6
	1909	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	.....
Maine	1914	531	564	541	533	518	509	*479*	505	507	**528**	553	550	585	81.9
	1909	523	528	532	532	528	*488*	525	523	508	508	516	531	552	88.4
Massachusetts	1914	11,437	11,339	12,200	**12,358**	12,162	12,026	12,034	11,420	10,862	11,052	11,077	*10,079*	10,635	81.6
	1909	9,079	8,932	8,964	9,206	9,039	9,012	9,113	9,152	9,116	**9,278**	8,773	9,235	9,125	94.6
New Jersey	1914	11,683	11,790	12,140	**12,261**	12,180	11,863	11,552	11,435	11,543	12,019	11,706	10,961	*10,748*	84.7
	1909	10,129	10,239	10,557	10,548	10,555	10,253	9,641	*9,529*	9,876	9,907	10,018	10,289	10,137	90.2
New York	1914	5,514	5,382	5,458	5,724	**6,066**	5,885	5,871	5,578	5,451	5,492	5,265	5,042	*4,954*	81.7
	1909	5,252	5,312	5,408	5,516	5,378	5,175	5,188	5,157	4,955	5,461	**5,571**	5,230	*4,682*	84.0
Pennsylvania	1914	6,389	6,497	6,543	**6,749**	6,518	6,337	6,383	6,271	6,321	6,445	6,276	*6,160*	6,168	91.3
	1909	6,086	6,122	6,005	6,138	6,132	6,026	5,994	*5,954*	5,990	5,970	6,075	6,250	**6,376**	93.4
Rhode Island	1914	7,928	8,307	**8,328**	8,249	8,191	7,927	7,872	7,696	7,699	7,810	7,850	7,653	*7,554*	90.7
	1909	7,792	*7,548*	7,700	7,783	7,829	7,660	7,726	7,737	7,823	7,855	7,891	7,994	7,957	94.4

The industry manifests no marked tendency toward a seasonal variation, the minimum number (45,253) employed in November, 1914, being 88.6 per cent of the maximum (51,070) reported in March. The largest number of wage earners reported for any month of 1909 was 44,863 for March, and the smallest number, 43,212, for July, the minimum number being 96.3 per cent of the maximum. The greatest regularity in monthly employment in 1914 is shown for Connecticut where the minimum number of wage earners, 1,725, employed in September, formed 94.8 per cent of the maximum, 1,819, employed in October. The months of greatest and least employment in 1914, and the number of wage earners reported for such months, are given for a greater number of states in Table 12.

Prevailing hours of labor.—In Table 5 the average number of wage earners reported for 1914 and 1909 for the industry has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment was classified as a total, even though a few employees worked a greater or smaller number of hours.

Table 5

AVERAGE NUMBER OF WAGE EARNERS.

STATE.	Census year.	Total.	In establishments where the prevailing hours of labor per week were—					
			48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.
United States	1914	48,467	557	2,769	16,186	23,695	5,226	34
	1909	44,046	107	1,102	398	28,172	12,639	1,628
Connecticut	1914	1,764	12	.....	2	1,648	102	.....
	1909	1,719	.....	.....	2	351	1,366	.....
Delaware	1914	1,305	.....	.....	.....	1,288	17	.....
	1909	1,580	.....	.....	.....	1,580	.....	.....
Maine	1914	531	.....	.....	.....	531	.....	.....
	1909	523	.....	.....	.....	.....	523	.....
Massachusetts	1914	11,437	19	157	5,573	5,510	144	34
	1909	9,079	8	119	56	8,009	542	345
New Jersey	1914	11,683	7	912	159	9,203	1,402	.....
	1909	10,129	4	33	60	6,194	2,968	870
New York	1914	5,514	246	439	2,914	951	964	.....
	1909	5,252	65	816	197	2,830	1,324	20
Pennsylvania	1914	6,389	184	166	1,301	3,097	1,641	.....
	1909	6,086	10	39	33	2,078	3,874	52
Rhode Island	1914	7,928	3	832	5,862	972	259	.....
	1909	7,792	.....	.....	.....	6,334	1,438	20

This table indicates a tendency toward a decrease in the length of the working day in this industry. Over nine-tenths (96.4 per cent) of the wage earners in the industry in 1909, as compared with three-fifths (59.7 per cent) in 1914, were employed in establishments where the prevailing hours were more than 54 per week. More than half of the total number in 1909 and almost half in 1914 worked in establishments operating between 54 and 60 hours per week, while somewhat more than one-fourth (28.7 per cent) in 1909, as compared with one-tenth (10.8 per cent) in 1914, were in establishments where the hours were 60 per week. Only 3.6 per cent of the total number of wage earners in the industry in 1909, as compared with 40.3 per cent in 1914, were in establishments where the prevailing hours of employment per week were as low as 54.

The tendency toward a shortening of the working day is further shown by the decrease in the average number of hours of labor per wage earner per week. These figures were obtained by computing the total number of hours of labor for all wage earners and dividing their total by the number of wage earners. The averages obtained were 55.9 in 1914 and 58 in 1909, indicating a decrease of 2.1 hours per week for the five-year period.

In making this computation the number of wage earners in each group is multiplied by the number of hours of labor per week for the group and the resultants of the several groups added. The lower group, "48 hours and under," has been figured at 48 hours; the "between 48 and 54" group at 51 hours; the "between 54 and 60" group at 57 hours; and the "between 60 and 72" group at 66 hours.

Character of ownership.—Table 6 presents statistics concerning the character of ownership, or legal organization, of establishments in the industry, for 1914 and 1909.

Table 6

STATE.	Census year.	NUMBER OF ESTABLISHMENTS OWNED BY—			AVERAGE NUMBER OF WAGE EARNERS.						VALUE OF PRODUCTS.						
					Total.	In establishments owned by—			Per cent of total.			Total.	Of establishments owned by—			Per cent of total.		
		Individuals.	Corporations.	All others.		Individuals.	Corporations.	All others.	Individuals.	Corporations.	All others.		Individuals.	Corporations.	All others.	Individuals.	Corporations.	All others.
United States	1914	134	276	97	48,467	4,276	41,219	2,972	8.8	85.0	6.1	$109,291,536	$7,971,546	$94,193,033	$7,126,957	7.3	86.2	6.5
	1909	123	214	89	44,046	3,166	38,397	2,483	7.2	87.2	5.6	83,556,432	5,502,502	72,248,551	5,805,379	6.6	86.5	6.9
Massachusetts	1914	7	45	5	11,437	244	10,376	817	2.1	90.7	7.1	22,455,086	347,305	20,149,734	1,958,047	1.5	89.7	8.7
	1909	6	35	7	9,079	248	8,525	306	2.7	93.9	3.4	21,892,890	283,436	20,949,085	660,369	1.3	95.7	3.0
New Jersey	1914	20	65	13	11,683	386	10,821	476	3.3	92.6	4.1	27,986,512	602,055	26,576,945	807,512	2.2	95.0	2.9
	1909	19	42	6	10,129	296	9,367	466	2.9	92.5	4.6	15,795,788	388,837	14,704,571	702,380	2.5	93.1	4.4
New York	1914	34	43	22	5,514	366	4,784	364	6.6	86.8	6.6	16,302,576	1,167,860	13,850,983	1,283,733	7.2	85.0	7.9
	1909	31	34	16	5,252	422	4,496	334	8.0	85.6	6.4	9,673,228	1,119,383	6,715,938	1,837,907	11.6	69.4	19.0
Pennsylvania	1914	50	53	47	6,389	899	4,346	1,144	14.1	68.0	17.9	15,451,576	1,556,282	11,273,668	2,621,626	10.1	73.0	17.0
	1909	48	37	50	6,086	859	4,067	1,160	14.1	66.8	19.1	12,059,297	1,432,593	8,570,600	2,056,104	11.9	71.1	17.0
Rhode Island	1914	12	32	3	7,928	2,194	5,721	13	27.7	72.2	0.2	16,300,783	3,969,996	12,309,842	20,945	24.4	75.5	0.1
	1909	10	32	3	7,792	1,171	6,564	57	15.0	84.2	0.7	13,955,700	2,023,878	11,862,353	69,469	14.5	85.0	0.5

The industry, as a whole, shows a substantial increase from 1909 to 1914 in the number of establishments under corporate control, but a slight decrease in the proportion of the total wage earners employed and in the value of products reported by this class.

There was considerable variation among the states in the relative importance of establishments operated by individuals and corporations. Thus, in Massachusetts, corporations constituted almost four-fifths of the total number of establishments, gave employment to nine-tenths of the wage earners, and reported almost nine-tenths of the total value of products. The proportions for the two latter items for New Jersey, where almost two-thirds of the establishments were under corporate ownership, were even higher. In Pennsylvania, on the other hand, corporations controlled only about one-third of the establishments, but gave employment to more than two-thirds of the wage earners and contributed 73 per cent of the total value of products.

Size of establishments.—The tendency of the industry to become concentrated in large establishments is indicated by the statistics given in Table 7.

Of the 507 establishments reported for 1914, 25, or 4.9 per cent, reported products valued at $1,000,000 or over. While such establishments represented a small proportion of the total number, they reported more than one-half of the total value of products.

On the other hand, the small establishments—that is, those having products valued at less than $20,000—constituted 29.2 per cent of the total number of establishments, but the value of their products represented only 1.2 per cent of the total. The great bulk of manufactures was reported by plants having products valued at $100,000 or over, such establishments reporting 89.5 per cent of the total value in 1914 and 89.4 per cent in 1909.

During the five years, 1909 to 1914, the average value of products per establishment as computed from Table 1, increased from $196,142 in 1909 to $215,565

in 1914; the average value added by manufacture, decreased from $113,369 to $103,721, and the average number of wage earners per establishment from 103.4 to 95.6.

Table 7

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	507	48,467	$109,291,536	$52,586,401
	1909	426	44,046	83,556,432	48,295,131
Less than $5,000	1914	48	129	141,421	107,955
	1909	38	86	109,788	84,775
$5,000 to $20,000	1914	100	866	1,212,588	842,050
	1909	89	743	1,079,228	792,475
$20,000 to $100,000	1914	195	5,360	10,122,651	5,390,193
	1909	165	4,428	7,663,519	4,638,022
$100,000 to $1,000,000	1914	139	22,034	42,463,422	23,205,327
	1909	114	21,798	37,395,345	22,415,860
$1,000,000 and over	1914	25	20,078	55,351,454	23,040,876
	1909	20	16,991	37,308,552	20,363,999
Per cent distribution:					
Less than $5,000	1914	9.5	0.3	0.1	0.2
	1909	8.9	0.2	0.1	0.2
$5,000 to $20,000	1914	19.7	1.8	1.1	1.6
	1909	20.9	1.7	1.3	1.6
$20,000 to $100,000	1914	38.5	11.1	9.3	10.3
	1909	38.7	10.1	9.2	9.6
$100,000 to $1,000,000	1914	27.4	45.5	38.9	44.1
	1909	26.8	49.5	44.8	46.4
$1,000,000 and over	1914	4.9	41.4	50.6	43.8
	1909	4.7	38.6	44.6	42.2

Table 8 shows the size of establishments in 1914 and 1909 as measured by the number of wage earners employed for the industry as a whole and for eight leading states.

Table 8

STATE.	Census year.	TOTAL.		ESTABLISHMENTS EMPLOYING—															
		Establishments.	Wage earners (average number).	No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.	
					Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States	1914	507	48,467	7	83	270	160	2,072	106	3,664	49	3,368	54	8,596	22	7,748	18	11,247	8	11,502
	1909	426	44,046	4	78	240	126	1,631	80	2,602	47	3,109	41	6,675	23	8,056	21	13,896	6	7,837
Connecticut	1914	12	1,764	.....	1	2	3	40	4	113	1	58	1	228	.....	.....	2	1,323	.....	.....
	1909	10	1,719	.....	1	2	3	50	3	127	.....	.....	.....	.....	1	256	2	1,284	.....	.....
Delaware	1914	2	1,305	.....	.....	.....	1	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1,288
	1909	1	1,580	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1,580
Maine	1914	1	531	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	531	.....	.....
	1909	1	523	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	523	.....	.....
Massachusetts	1914	57	11,437	.....	4	13	11	162	10	315	11	807	8	1,430	6	2,047	4	2,280	3	4,383
	1909	48	9,079	1	3	10	8	84	7	225	6	357	12	1,999	5	1,733	5	3,576	1	1,095
New Jersey	1914	98	11,663	.....	22	81	19	238	24	852	8	507	14	2,074	5	1,813	3	1,882	3	4,236
	1909	67	10,129	.....	12	34	15	170	12	369	11	691	7	1,098	2	614	5	3,042	3	4,111
New York	1914	99	5,514	3	17	52	48	560	15	477	3	190	8	1,320	4	1,320	.....	.....	1	1,595
	1909	81	5,252	2	17	48	33	441	14	451	4	308	3	543	5	1,477	3	1,984	.....	.....
Pennsylvania	1914	150	6,389	2	28	86	58	778	37	1,317	14	958	7	991	2	842	2	1,417	.....	.....
	1909	135	6,086	.....	29	98	46	630	32	1,019	15	948	9	1,236	3	1,261	1	894	.....	.....
Rhode Island	1914	47	7,928	.....	5	20	10	135	7	233	4	306	10	1,694	5	1,726	6	3,814	.....	.....
	1909	45	7,792	.....	7	25	10	149	6	211	4	343	8	1,515	6	2,462	3	2,036	1	1,051

Of the 507 establishments engaged in the industry, 7 employed no wage earners. These were small plants in which the work was done by proprietors and firm members. The small establishments (those employing from 1 to 50 wage earners) greatly predominate and they represent a slightly increased proportion of the total in 1914 as compared with 1909. Nearly one-third of all establishments reporting employed from 6 to 20 wage earners each. The number of wage earners in establishments employing more than 1,000 wage earners formed 23.7 per cent of the total for the industry in 1914 and 17.8 per cent in 1909.

Engines and power.—Table 9 shows, for 1914, 1909, and 1904, for the industry, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

At each census steam power constituted the major part of the primary power employed in the industry, the proportion which it formed of the total increasing slightly from census to census. The amount of water-power, on the other hand, showed an absolute as well as a relative decrease from 1904 to 1914. There was a considerable increase in the horsepower of electric motors operated by purchased current (rented electric power). The number and horsepower of electric motors used for distributing power by means of current generated in the establishments in the industry also showed a very decided increase.

Table 9

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	2,694	2,181	1,663	130,172	107,746	84,868	100.0	100.0	100.0
Owned	1,964	1,990	1,621	122,165	103,605	81,396	93.8	96.2	95.9
Steam engines and turbines [1]	1,868	1,893	1,533	111,506	92,284	70,385	85.7	85.6	82.9
Internal-combustion engines	32	20	10	690	1,207	[1] 881	0.5	1.1	[1] 1.0
Water wheels, turbines, and motors	64	77	78	9,969	10,114	10,130	7.7	9.4	11.9
Rented	730	191	42	8,007	4,141	3,472	6.2	3.8	4.1
Electric	730	191	42	7,162	2,665	1,087	5.5	2.5	1.3
Other				845	1,476	2,385	0.6	1.4	2.8
Electric	4,249	1,419	488	51,021	24,011	11,724	100.0	100.0	100.0
Rented	730	191	42	7,162	2,665	1,087	14.0	11.1	9.3
Generated by establishments reporting	3,519	1,228	446	43,859	21,346	10,637	86.0	88.9	90.7

[1] Figures for horsepower include for 1904 the amounts reported under the head of "other" owned power.

Table 12 shows the amount of the different kinds of power, by states. The states which ranked highest with respect to the amount of power used were Massachusetts, Rhode Island, New Jersey, Pennsylvania, and New York. The total horsepower reported for those states in 1914 was 107,529, or 82.6 per cent of the total for the United States. Steam was the most important form of power in all of the states shown in the table. The largest amount of steam power was reported for Massachusetts, the largest amount of water power for Connecticut, and the largest amount of rented electric power for Massachusetts.

Fuel consumed.—Table 10 shows, for 1914, the quantity of each kind of fuel used for which data were obtained, for the industry as a whole, and for 11 separate states.

Bituminous coal was the principal class of fuel used in every state, except New Jersey, in which anthracite coal was the leading kind of fuel reported.

Table 10

STATE.	COAL.		Oil, including gasoline (barrels).	Gas (1,000 cubic feet).
	Anthracite (tons, 2,240 lbs.).	Bituminous (tons, 2,000 lbs.).		
United States	490,587	896,589	31,869	143,953
Connecticut	20	56,849	1,570	1,609
Illinois		10,953	7	364
Kentucky		7,566		
Maryland	30	2,330	1	
Massachusetts	57,855	234,654	1,174	9,583
New Jersey	252,024	85,683	2,390	54,078
New York	46,883	60,306	690	21,026
North Carolina		3,620		
Ohio		26,032		11,000
Pennsylvania	77,869	142,182	252	23,097
Rhode Island	55,906	198,251	18,790	8,832
All other states		69,063	6,995	14,364

DETAIL STATE TABLES.

Table 11 shows for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products as reported for the dyeing and finishing of textiles. Table 12 presents for 1914, by states, the more detailed statistics of the industry.

TABLE 11.—COMPARATIVE SUMMARY, BY STATES, FOR 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	507	48,467	130,172	$24,872	$56,705	$109,292
	1909	426	44,046	107,746	21,227	35,261	83,556
	1904	360	35,565	84,868	15,469	19,621	50,850
Connecticut	1914	12	1,764	7,738	923	1,455	3,503
	1909	10	1,719	5,851	872	1,480	3,562
	1904	10	1,406	4,883	640	927	2,215
Illinois	1914	8	268	476	149	208	504
	1909	12	172	356	92	105	363
	1904	8	123	532	45	30	161
Maryland	1914	4	87	177	41	97	205
	1909	3	79	93	32	61	127
Massachusetts	1914	57	11,437	30,932	5,843	10,989	22,455
	1909	48	9,079	24,513	4,430	10,469	21,893
	1904	46	7,508	19,242	3,262	4,179	11,049
New Jersey	1914	98	11,683	22,876	5,926	13,706	27,987
	1909	67	10,129	19,989	5,016	6,353	15,796
	1904	57	7,597	12,835	3,466	5,052	11,980
New York	1914	99	5,514	13,497	$2,925	$10,452	$16,303
	1909	81	5,252	8,750	2,321	4,139	9,673
	1904	55	3,586	7,128	1,578	1,339	4,362
North Carolina	1914	4	194	273	61	106	203
	1909	4	330	556	86	113	307
	1904	4	301	705	83	86	251
Ohio	1914	5	382	4,100	191	444	706
	1909	6	184	4,578	94	243	423
Pennsylvania	1914	150	6,389	14,685	3,469	8,456	15,452
	1909	135	6,086	13,560	2,988	5,331	12,056
	1904	123	4,585	9,712	2,076	2,701	6,786
Rhode Island	1914	47	7,928	25,539	3,966	8,764	16,301
	1909	45	7,792	21,179	3,616	5,319	13,956
	1904	37	7,562	18,705	3,182	3,639	9,981
All other states	1914	23	2,821	9,879	1,378	2,028	5,673
	1909	15	3,224	8,291	1,680	1,848	5,397
	1904	20	2,897	11,126	1,137	1,668	4,065

TABLE 12.—DETAIL STATISTICS FOR THE DYEING AND FINISHING OF TEXTILES, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.	EXPENSES.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male	Female		Officials.	Clerks, etc.
								Maximum month.	Minimum month.								
United States	507	53,273	353	1,142	2,444	867	48,467	Mh 51,070	No 45,253	46,776	37,853	8,175	511	237	$139,193,871	$3,452,089	$3,019,316
Connecticut	12	1,857	2	28	45	18	1,764	Oc 1,819	Se 1,725	1,729	1,507	177	26	19	4,837,005	81,310	86,047
Illinois	8	300	5	8	10	9	268	Mh 302	Jy 222	291	182	104	1	4	579,231	18,544	13,104
Kentucky	3	127	2	5	3	1	116	Au [2] 118	Ap [2] 114	119	101	18	.....	.....	213,782	14,132	3,647
Maryland	4	97	2	5	3	.....	87	Fe 95	Jy 71	90	71	18	.....	1	140,909	12,600	950
Massachusetts	57	12,226	14	167	436	172	11,437	Mh 12,358	No 10,079	11,440	9,227	1,998	162	53	39,014,407	733,135	544,143
New Jersey	98	12,702	48	281	567	123	11,683	Mh 12,261	De 10,746	10,733	8,993	1,671	39	30	32,939,872	840,360	635,754
New York	99	6,390	89	194	383	210	5,514	Ap 6,066	De 4,954	4,987	3,486	1,477	17	7	13,585,712	514,373	508,077
North Carolina	4	204	2	6	1	1	194	My 220	Se 175	183	116	64	2	1	179,158	7,900	1,500
Ohio	5	404	1	8	11	2	382	Ja 450	Se 259	428	387	29	12	.....	1,451,379	22,538	13,047
Pennsylvania	150	7,251	156	244	351	111	6,389	Mh 6,749	No 6,160	6,222	5,352	727	105	38	17,281,294	574,175	401,428
Rhode Island	47	8,660	21	140	439	132	7,928	Fe 8,328	De 7,554	7,761	6,175	1,409	106	71	22,749,522	450,787	536,132
All other states [4]	20	3,055	11	56	195	88	2,705	.....	.....	2,793	2,256	483	41	13	6,221,600	182,229	275,487

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					
	Salaries and wages—Con.	For contract work.	Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage earners.		Rent of factory.	Taxes, including internal-revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines. [1]	Internal-combustion engines. [2]	Water wheels and motors. [1]	Electric (rented).	
United States	$24,872,318	$222,370	$490,135	$922,660	$51,933,138	$4,771,997	$109,291,536	$52,586,401	130,172	111,506	1,535	9,969	7,162	43,859
Connecticut	923,404	5,117	3,150	45,066	1,235,831	219,155	3,503,139	2,048,153	7,738	4,621	330	2,550	237	1,871
Illinois	149,237	1,057	900	4,642	178,345	29,449	504,199	296,405	476	379	.....	.....	97	42
Kentucky	58,350	.....	840	1,909	95,973	13,015	247,326	138,338	293	291	.....	.....	2	53
Maryland	40,897	3,500	.....	1,043	91,559	5,116	204,710	108,035	177	137	.....	.....	40	.....
Massachusetts	5,842,976	19,651	44,371	373,838	9,717,667	1,271,336	22,455,086	11,466,083	30,932	26,300	140	1,860	2,632	14,456
New Jersey	5,926,467	1,931	62,583	153,794	12,740,161	965,839	27,986,512	14,280,512	22,876	21,968	208	65	635	8,385
New York	2,925,211	109,637	146,783	80,221	10,039,132	412,846	16,302,576	5,850,598	13,497	9,924	522	1,897	1,154	3,908
North Carolina	60,619	211	1,320	1,162	90,832	14,678	203,379	97,869	273	225	40	.....	8	.....
Ohio	190,927	.....	3,250	6,832	392,477	51,108	705,618	262,033	4,100	4,080	.....	.....	20	510
Pennsylvania	3,469,473	77,772	124,123	60,729	7,810,373	645,315	15,451,576	6,995,888	14,685	14,013	270	25	377	2,283
Rhode Island	3,965,884	3,050	65,588	145,168	7,839,174	925,129	16,300,783	7,536,480	25,539	22,554	25	1,841	1,119	9,933
All other states [4]	1,318,873	344	37,227	48,256	1,701,614	219,011	5,426,632	3,506,007	9,586	7,014	.....	1,731	841	2,418

[1] Owned power only.
[2] Includes rented power, other than electric.
[3] Same number reported for one or more other months.
[4] All other states embrace: Alabama, 1 establishment; California, 2; Delaware, 2; Indiana, 2; Iowa, 1; Maine, 1; Minnesota, 1; Missouri, 2; Oregon, 1; South Carolina, 2; Tennessee, 2; West Virginia, 1; and Wisconsin, 2.

HAIRCLOTH.

Haircloth was formerly used most extensively in upholstering, and its manufacture was included under "upholstering materials." Large quantities of it are now used in the manufacture of clothing, and for this reason it was given a separate classification in 1909. The textile is usually made by using a warp of cotton yarn and a weft of horsehair; small quantities of worsted yarn and of hog and cattle hair are also reported as materials.

The haircloth industry is confined to three states—Pennsylvania, reporting 15 establishments in 1914, New York 3, and Rhode Island 1; as compared with 9, 2, and 3 plants in these respective states in 1909.

The following table presents statistics for this industry for 1914 and 1909.

Table 1

	HAIRCLOTH.		
	Number or amount.		Per cent of increase, [1] 1909–1914
	1914	1909	
Number of establishments	19	14	35.7
Persons engaged	674	621	8.5
Proprietors and firm members	22	11	100.0
Salaried employees	57	72	—20.8
Wage earners (average number)	595	538	10.6
Primary horsepower	1,723	995	73.2
Capital	$2,945,244	$2,280,717	29.1
Salaries and wages	388,907	323,808	20.1
Salaries	98,627	71,529	37.9
Wages	290,280	252,279	15.1
Paid for contract work	2,913	3,500	—16.8
Rent and taxes (including internal revenue)	35,161	32,996	6.6
Cost of materials	1,654,006	1,613,581	2.5
Value of products	2,395,486	2,230,033	7.4
Value added by manufacture (value of products less cost of materials)	741,480	616,452	20.3

[1] A minus sign (—) denotes decrease.

MATS AND MATTING.

This industry includes establishments engaged in the manufacture of doormats and floor mattings, art squares, rugs and carpets, the principal materials being wire grass and coir yarn (coir being the fiber prepared from the outer husk of the coconut). The products are woven with cotton warp, or plaited, and differ from the rugs and carpets made in establishments engaged primarily in the manufacture of "carpets and rugs, other than rag" or of "jute goods" in that their chief material is not wool or cotton or jute. Of the 12 establishments reporting in 1914, 4 are in Wisconsin, 3 in New York, 2 in Pennsylvania, and 1 each in New Jersey, Michigan, and Minnesota. Seven were controlled by corporations, 3 by individuals, and 2 by firms. The following table presents statistics for the industry for 1914, 1909, 1904, and 1899.

Table 1 — MATS AND MATTING.

	Number or amount.				Per cent of increase.[1]		
	1914	1909	1904	1899	1909–1914	1904–1909	1899–1904
Number of establishments	12	12	12	9			
Persons engaged	977	1,040	696	1,248	−6.2	49.4	−44.2
Proprietors and firm members	10	18	13	9	−50.0	38.4	44.4
Salaried employees	98	85	58	42	15.3	46.6	38.1
Wage earners (average number)	869	937	625	1,197	−7.3	49.9	−47.8
Primary horsepower	1,643	1,433	1,524	1,733	14.7	−6.0	−12.1
Capital	$5,055,114	$4,051,467	$838,607	$994,155	24.8	383.1	−15.6
Salaries and wages	552,070	479,953	316,139	268,342	15.0	51.8	17.8
Salaries	96,823	94,519	67,035	31,060	2.4	41.0	115.8
Wages	455,247	385,434	249,104	237,282	18.1	54.7	5.0
Paid for contract work	21,230	50,127	34,241	100	−57.6	46.4	.....
Rent and taxes (including internal revenue)	43,465	18,172	[2] 11,989	[2] 8,100	139.2	.....	.....
Cost of materials	1,170,214	1,066,566	574,168	516,137	9.7	85.8	11.2
Value of products	2,235,867	2,431,615	1,242,996	1,165,330	−8.1	95.6	6.7
Value added by manufacture (value of products less cost of materials)	1,065,653	1,365,049	668,828	649,193	−21.9	104.1	3.0

[1] A minus sign (−) denotes decrease.

[2] Not including internal revenue.

THE MANUFACTURE OF CLOTHING.

Scope of the report.—This report presents statistics for the manufacture of men's, women's, and children's clothing, including shirts; collars and cuffs; corsets; men's furnishing goods; hats and caps, other than felt, straw, and wool; millinery and lace goods; suspenders, garters, and elastic woven goods; and the making of buttonholes.[1]

Up to and including 1914, the great bulk of the clothing manufactured in the United States was for home consumption. The exports have been comparatively small and confined chiefly to Canada.

Comparison with earlier censuses.—Table 1 summarizes the statistics for the clothing industries combined, for the censuses of 1914, 1909, and 1904, and gives percentages of increase for the five-year periods.

The general increase shown in the table was much greater for all items for the five-year period 1904–1909 than for the later five-year period. The decrease of six-tenths of 1 per cent in the number of proprietors and firm members from 1909 to 1914 was due doubtless to changes in character of ownership, since during this period there was a considerable decrease in the number of establishments operated by individuals and firms and an increase in those operated by corporations. A number of the proprietors and firm members reported in 1909, therefore, may have been classed as officials of corporations in 1914.

[1] The statistics for these products are shown in the general report for manufactures, under the following classifications: Clothing, men's; clothing, men's, buttonholes; clothing, women's; collars and cuffs, men's; corsets; furnishing goods, men's; hats and caps, other than felt, straw, and wool; millinery and lace goods; shirts, suspenders, garters, and elastic woven goods.

Table 1

	CLOTHING.			PER CENT OF INCREASE.[1]	
	1914	1909	1904 [2]	1909–1914	1904–1909
Number of establishments	14,953	14,169	10,568	5.5	34.6
Persons engaged	591,292	568,945	410,437	3.9	38.1
Proprietors and firm members	18,778	18,900	14,641	−0.6	29.1
Salaried employees	61,919	54,328	33,245	14.0	63.4
Wage earners (average number)	510,595	495,717	362,551	3.0	36.7
Primary horsepower	120,314	90,800	59,121	32.5	53.6
Capital	$571,864,928	$512,868,949	$310,435,145	11.5	65.2
Salaries and wages	326,605,102	287,917,187	177,662,149	13.4	62.1
Salaries	76,492,299	61,396,828	31,621,190	24.6	94.2
Wages	250,112,803	226,520,359	146,040,959	9.9	55.8
Paid for contract work	64,202,558	59,166,397	46,316,573	8.5	27.7
Rent and taxes (including internal revenue)	23,867,489	17,313,279	[3] 10,927,993	37.9	58.4
Cost of materials	673,011,961	622,904,234	407,514,007	8.0	52.9
Value of products	1,297,273,396	1,174,159,358	782,756,315	10.5	50.0
Value added by manufacture (value of products less cost of materials)	624,261,435	551,255,124	375,242,308	13.2	46.9

[1] A minus sign (−) denotes decrease.
[2] Does not include establishments manufacturing elastic woven goods, which were included under the classification "rubber and elastic goods."
[3] Exclusive of internal revenue.

Table 2 presents a summary of the principal statistics for the 10 industries constituting the clothing group for the censuses of 1914, 1909, and 1904.

Table 2

	Census year.	Total.	Clothing, men's.	Clothing, men's, buttonholes.	Shirts.	Furnishing goods, men's.[1]	Collars and cuffs, men's.	Suspenders, garters, and elastic woven goods.	Hats and caps, other than felt, straw, and wool.	Clothing, women's.	Corsets.	Millinery and lace goods.[1]
Number of establishments	1914	14,953	4,330	139	792	551	35	216	580	5,564	167	2,079
	1909	14,169	5,584	146	770	602	47	251	494	4,558	138	1,579
	1904	10,568	4,504	141	641	503	44	[2]	415	3,351	109	860
Persons engaged	1914	591,292	200,809	856	56,980	25,964	10,936	11,038	8,942	198,685	23,146	53,936
	1909	568,945	218,255	1,031	53,182	19,162	13,228	11,545	7,609	179,021	19,611	46,301
	1904	410,437	156,503	1,075	39,863	18,918	11,558	[2]	7,617	131,538	11,948	31,417
Proprietors and firm members.	1914	18,778	6,121	169	957	565	18	199	797	7,516	101	2,335
	1909	18,900	7,375	181	1,127	728	43	251	688	6,482	91	1,934
	1904	14,641	6,103	164	903	639	55	[2]	605	4,913	96	1,163
Salaried employees	1914	61,919	20,941	15	4,051	2,940	818	1,193	823	22,262	2,549	6,327
	1909	54,328	19,697	20	3,542	2,514	764	1,153	720	18,796	1,956	5,166
	1904	33,245	13,210	8	2,461	1,880	717	[2]	418	10,920	877	2,754
Wage earners (average number).	1914	510,595	173,747	672	51,972	22,459	10,100	9,646	7,322	168,907	20,496	45,274
	1909	495,717	191,183	830	48,513	15,920	12,421	10,141	6,201	153,743	17,564	39,201
	1904	362,551	137,190	903	36,499	16,399	10,786	[2]	6,594	115,705	10,975	27,500
Primary horsepower	1914	120,314	35,664	205	17,617	5,880	3,896	7,524	1,339	28,396	7,057	12,736
	1909	90,800	30,069	176	12,656	3,983	3,234	4,899	990	22,294	4,581	7,918
	1904	59,121	21,106	137	8,723	3,061	2,360	[2]	797	14,916	3,284	4,737
Capital	1914	$571,864,928	$224,050,401	$224,381	$50,943,841	$27,887,725	$15,025,246	$16,343,686	$6,846,996	$153,549,295	$23,892,756	$53,100,601
	1909	512,868,949	230,703,112	225,491	44,617,194	19,116,059	14,684,667	15,207,880	5,274,973	129,301,057	18,033,421	35,705,095
	1904	310,435,145	153,177,500	262,091	23,379,774	16,116,705	11,926,879	[2]	4,185,150	73,947,823	9,589,402	17,849,821
Salaries and wages	1914	326,605,102	113,799,836	340,294	23,711,809	12,072,482	5,482,023	5,931,600	5,431,775	118,696,524	12,244,920	28,893,839
	1909	287,917,187	112,727,053	400,838	20,273,088	8,684,404	5,800,102	5,818,977	4,203,692	98,986,029	9,334,680	21,688,319
	1904	177,662,149	70,928,668	385,277	13,270,511	6,613,654	4,304,390	[2]	3,789,504	61,156,137	4,610,321	12,603,687
Salaries	1914	76,492,299	26,971,825	13,972	4,542,112	3,657,002	987,877	1,655,474	924,254	26,122,882	4,268,199	7,348,702
	1909	61,396,828	23,082,137	11,806	3,640,690	2,777,034	887,786	1,545,675	782,637	20,417,768	2,870,536	5,380,759
	1904	31,621,190	13,703,162	4,809	2,037,119	1,520,739	637,197	[2]	435,915	9,975,944	1,009,859	2,296,446
Wages	1914	250,112,803	86,828,011	326,322	19,169,697	8,415,480	4,494,146	4,276,126	4,507,521	92,573,642	7,976,721	21,545,137
	1909	226,520,359	89,644,921	389,032	16,632,398	5,907,370	4,912,316	4,273,302	3,421,055	78,568,261	6,464,144	16,307,560
	1904	146,040,959	57,225,506	380,468	11,233,392	5,092,915	3,667,193	[2]	3,353,589	51,180,193	3,600,462	10,307,241

[1] Includes for 1904 some establishments manufacturing suspenders, garters, and elastic woven goods, which at that census were included under the classifications "furnishing goods, men's;" "millinery and lace goods;" and "rubber and elastic goods."
[2] Figures not available.

Table 2—Continued.

	Census year.	Total.	Clothing, men's.	Clothing men's, buttonholes.	Shirts.	Furnishing goods, men's.	Collars and cuffs, men's.	Suspenders, garters, and elastic woven goods.	Hats and caps, other than felt, straw, and wool.	Clothing, women's.	Corsets.	Millinery and lace goods.
Paid for contract work	1914	$64,202,558	$37,755,023	$524	$5,973,892	$1,134,951	$1,045,341	$236,543	$109,008	$15,843,554	$183,966	$1,919,756
	1909	59,166,397	40,807,991	7,992	5,236,833	821,801	616,787	121,120	65,647	10,186,052	216,834	1,085,340
	1904	46,316,573	34,363,892	550	3,036,327	415,417	1,073,902	(1)	9,710	6,960,704	.....	456,071
Rent and taxes (including internal revenue).	1914	23,867,489	7,517,931	31,120	1,197,779	775,190	100,885	296,936	454,837	10,058,805	583,274	2,850,732
	1914	17,313,279	5,917,716	27,762	881,933	551,449	96,525	282,287	319,745	7,055,874	313,521	1,866,467
	[2] 1904	10,927,993	3,837,757	22,470	649,740	507,780	73,655	(1)	263,886	4,289,971	156,539	1,126,195
Cost of materials	1914	673,011,961	230,031,690	90,012	50,664,974	31,593,442	6,565,578	15,191,194	9,267,577	252,345,040	19,586,533	57,675,921
	1909	622,904,234	252,522,567	104,577	44,992,879	26,224,090	5,988,588	16,912,165	6,690,452	208,788,226	15,640,415	45,040,275
	1904	407,514,007	185,793,436	94,857	25,639,402	21,924,658	4,639,842	(1)	6,307,663	130,719,996	6,135,237	26,258,916
Value of products	1914	1,297,273,396	458,210,985	637,728	95,815,013	52,453,338	18,530,840	24,432,753	18,593,221	473,888,354	40,550,702	114,160,462
	1909	1,174,159,358	485,677,493	780,720	82,399,142	42,129,938	17,230,452	28,349,807	13,689,338	384,751,649	33,257,187	85,893,632
	1904	782,756,315	355,796,571	700,158	50,971,105	36,444,305	12,587,277	(1)	12,955,490	247,661,560	14,862,081	50,777,768
Value added by manufacture (value of products less cost of materials).	1914	624,261,435	228,179,295	547,716	45,150,039	20,859,896	11,965,262	9,241,559	9,325,644	221,543,314	20,964,169	56,484,541
	1909	551,255,124	233,154,926	676,143	37,406,263	15,905,848	11,241,864	11,437,642	6,998,886	175,963,423	17,616,772	40,853,357
	1904	375,242,308	170,003,135	605,301	25,331,703	14,519,647	7,947,435	(1)	6,647,827	116,941,564	8,726,844	24,518,852

[1] Figures not available.

[2] Exclusive of internal revenue.

The manufacture of men's clothing and of women's clothing was by far the most important of the 10 industries shown in the table. These 2 industries gave employment to 67.1 per cent of the total number of wage earners, and the value of their products formed 71.9 per cent of the total for the 10 industries for 1914. In value of products, men's clothing ranked first and women's clothing second in 1909 and 1904, but men's clothing was displaced by women's clothing in 1914. The manufacture of shirts was third in importance in 1904, but millinery and lace goods held this rank in 1909 and 1914. In 1914, of the totals for the 10 industries shown in the table, these 4 industries reported 86.2 per cent of the average number of wage earners and 88 per cent of the value of products. The greatest number of wage earners was employed in the manufacture of men's clothing, with women's clothing second, and shirts third, in this respect.

The decrease in the manufacture of men's clothing and the increase in that of women's clothing are more apparent than real, several causes contributing to this showing. Some of the establishments in 1909 engaged in the manufacture of women's and of children's clothing did not give a proper description of their products, and their reports were classified as "clothing, men's." There was a large increase in the manufacture of children's clothing, which in 1909 was largely included with men's clothing, and in 1914 with "clothing, women's," and also there was a large increase in the manufacture of women's ready-made clothing.

Regular factories and contract shops.—An important feature of the men's and women's clothing industry is that many establishments manufacture clothing on a contract basis from materials furnished by others. Many of these establishments are small and often much of the work is done by the contractor and his family. Other establishments working under contract, however, are of considerable size, employing large numbers of wage earners. In order to bring out the extent to which this practice obtains, a segregation has been made in the following table, for 1914 and 1909, into those establishments which manufacture clothing from their own materials and those which worked exclusively on materials furnished by others—in many cases by establishments of the class first mentioned.

Table 3

	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Expressed in thousands.				
Clothing, men's:							
1914	4,830	173,747	$224,050	$86,828	$230,032	$458,211	$228,179
1909	5,584	191,183	230,703	89,645	252,523	485,677	233,154
Regular factories—							
1914	2,331	123,939	218,024	63,495	228,117	425,087	196,970
1909	2,367	126,196	223,343	56,361	249,691	439,860	190,169
Contract shops—							
1914	2,499	49,808	6,026	23,333	1,915	33,124	31,209
1909	3,217	64,987	7,360	33,284	2,832	45,817	42,985
Clothing, women's:							
1914	5,564	168,907	153,549	92,574	252,345	473,888	221,543
1909	4,558	153,743	129,301	78,568	208,788	384,752	175,964
Regular factories—							
1914	4,470	151,950	150,929	85,869	251,330	462,005	210,675
1909	3,709	139,721	127,636	71,578	207,891	374,333	166,442
Contract shops—							
1914	1,094	16,957	2,620	6,705	1,015	11,883	10,868
1909	849	14,022	1,665	6,990	897	10,419	9,522

Other wearing apparel.—In addition to the 14,953 establishments shown in Table 2, for the combined clothing industry, the value of whose products was $1,297,273,396, other articles of wearing apparel are reported in connection with certain industries shown in the general report on manufactures. The following table gives the value of products of this class as reported for the census of 1914:

Table 4

	Value of products.		Value of products.
Total	$897,770,592	Hosiery and knit goods:	
		Hosiery	$98,098,590
Boots and shoes:		Shirts and drawers	57,523,051
Leather	501,760,458	Combination suits	35,596,034
Rubber	53,822,123	Bathing suits	2,033,889
		Leggings	313,952
Fur goods	43,632,693	Gloves and mittens	10,519,613
Gloves and mittens, leather	21,614,109	Hoods and scarfs	3,456,326
		Cardigan jackets and sweaters	26,195,002
Hats and caps:			
Fur-felt	37,349,744	Shawls	713,545
Wool-felt	1,944,484	All other fancy knit [1]	3,196,979

[1] Includes neckwear, skirts, wristers, etc.

Wage earners, sex and age distribution.—Table 5 gives the average number of wage earners employed and their per cent distribution as males 16 years of age and over, females 16 years of age and over, and children under 16 years of age, for 1914 and 1909, for the clothing industry as a whole and for each of the separate industries.

Table 5

INDUSTRY.	Census year.	WAGE EARNERS. Average number.	Per cent of total. 16 years of age and over. Male.	Female.	Under 16 years of age.
Clothing	1914	510,595	36.1	62.6	1.3
	1909	495,717	36.4	61.8	1.8
Clothing, men's	1914	173,747	47.6	51.3	1.1
	1909	191,183	48.1	50.2	1.7
Clothing, men's, buttonholes	1914	672	54.3	43.5	2.2
	1909	830	58.7	40.8	0.5
Shirts	1914	51,972	19.8	77.4	2.8
	1909	48,513	20.6	76.1	3.3
Furnishing goods, men's	1914	22,459	16.8	80.8	2.4
	1909	15,920	16.0	81.1	2.9
Collars and cuffs, men's	1914	10,100	25.6	74.1	0.3
	1909	12,421	17.9	81.7	0.4
Suspenders, garters, and elastic woven goods.	1914	9,646	36.0	60.3	3.7
	1909	10,141	36.7	60.2	3.1
Hats and caps, other than felt, straw, and wool.	1914	7,322	72.2	27.3	0.5
	1909	6,201	70.9	28.2	1.0
Clothing, women's	1914	168,907	36.1	63.3	0.6
	1909	153,743	35.8	63.3	0.9
Corsets	1914	20,496	13.0	83.9	3.0
	1909	17,564	12.6	83.9	3.5
Millinery and lace goods	1914	45,274	26.6	71.2	2.1
	1909	39,201	19.9	77.2	2.9

The establishments engaged in the manufacture of clothing employed 510,595 wage earners in 1914 and 495,717 in 1909. Of the number employed in 1914, males formed 36.1 per cent, females 62.6 per cent, and children 1.3 per cent, as compared with 36.4 per cent, 61.8 per cent, and 1.8 per cent, respectively, in 1909. Of those 16 years of age and over, females outnumbered the males in all but two of the industries—"clothing, men's, buttonholes," and "hat and caps, other than felt, straw, and wool"—and showed a decrease in the proportion they formed of the total in four—"men's furnishing goods," "collars and cuffs," "hats and caps," and "millinery and lace goods." The largest proportion of female wage earners (83.9 per cent) is shown for those engaged in the manufacture of corsets, although the greatest number (106,983) were reported by the makers of women's clothing. With the exception of two industries, the proportion that wage earners under 16 years of age formed of the total decreased from 1909 to 1914.

Wage earners employed, by months.—Table 6 gives for the clothing industry as a whole and for each industry separately the total average number of wage earners employed during 1914 and 1909, together with the total number employed on the 15th of each month, or the nearest representative day. It also gives the percentage which the number employed for each month forms of the greatest number reported for any month.

The late winter and early spring was the time of greatest activity in 1914, March being the month of maximum employment for the industry as a whole and for four of the separate industries, while men's clothing shows the maximum number in February.

Table 6

WAGE EARNERS: 1914.
[Month of maximum employment for each industry is indicated by **boldface** figures and that of minimum by *italic* figures.]

INDUSTRY.	Average number employed during year.	Number employed on 15th day of the month or nearest representative day. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Per cent minimum is of maximum.
Clothing:														
1914	510,595	517,103	543,280	**553,289**	534,728	509,118	493,072	*476,014*	496,414	518,503	513,300	488,861	482,768	86.1
1909	495,717	475,243	499,600	**512,802**	498,404	483,673	472,572	*467,152*	485,574	510,141	519,216	515,160	508,921	90.0
Clothing, men's:														
1914	173,747	179,458	181,952	181,462	177,144	176,050	175,874	173,110	173,249	170,845	166,350	*162,913*	166,557	89.5
1909	191,183	*183,608*	187,237	190,217	186,878	189,287	191,846	190,434	191,477	193,076	194,276	196,082	189,770	91.9
Clothing, men's, buttonholes:														
1914	672	672	668	671	672	675	672	665	679	671	691	675	*653*	94.5
1909	830	829	819	811	811	*794*	797	817	841	852	862	868	860	91.5
Shirts:														
1914	51,972	56,006	56,487	**56,659**	54,890	53,483	51,365	49,985	48,164	*47,754*	48,753	50,113	50,005	84.3
1909	48,513	47,048	47,778	48,521	48,557	48,773	48,095	46,412	*46,281*	48,149	49,851	51,087	51,579	89.7
Furnishing goods, men's:														
1914	22,459	22,179	22,467	22,929	22,447	21,965	21,871	21,752	*21,625*	22,614	23,439	23,321	22,899	92.3
1909	15,920	*14,160*	15,310	16,028	15,794	15,240	15,313	15,629	15,756	16,321	17,027	17,452	16,995	81.1
Collars and cuffs, men's:														
1914	10,100	10,056	10,017	10,108	10,150	10,107	9,982	*9,631*	9,693	10,081	10,856	10,325	10,104	88.7
1909	12,421	*11,358*	12,114	12,451	12,801	12,677	12,513	12,331	11,684	12,438	12,822	12,920	12,942	87.8
Suspenders, garters, and elastic woven goods:														
1914	9,646	9,722	9,975	**10,027**	9,942	9,710	9,588	9,664	9,625	9,762	9,625	9,226	*8,886*	88.6
1909	10,141	*9,780*	9,983	10,113	9,974	9,969	9,858	9,808	9,924	10,402	10,630	**10,743**	10,509	91.0
Hats and caps, other than felt, straw, and wool:														
1914	7,322	7,200	7,338	7,409	7,267	7,388	7,316	7,350	7,339	7,502	7,391	*7,152*	7,212	95.3
1909	6,201	5,965	*5,934*	6,033	5,983	6,092	6,055	6,160	6,325	6,383	6,482	6,533	6,477	90.8
Clothing, women's:														
1914	168,907	163,807	170,894	**188,526**	180,925	166,707	157,066	*145,362*	160,868	180,611	182,103	164,977	156,038	77.1
1909	153,743	147,075	160,066	165,960	158,188	146,342	138,545	*136,034*	148,121	163,278	**167,525**	161,975	152,801	80.6
Corsets:														
1914	20,496	21,633	22,092	22,289	**22,315**	21,619	21,065	20,290	20,238	19,800	18,813	18,049	*17,749*	79.5
1909	17,564	*16,847*	17,206	17,616	17,585	17,370	17,221	17,224	17,355	17,860	**18,254**	18,167	18,065	92.3
Millinery and lace goods:														
1914	45,274	46,460	52,390	**53,209**	48,976	41,414	*38,273*	38,805	44,934	48,863	45,279	42,110	42,575	71.9
1909	39,201	38,579	43,243	**45,052**	41,833	37,129	*32,320*	33,303	37,810	41,382	41,487	39,333	38,923	71.2

In 1909 the greatest activity was reported for the fall and early winter months by all but one industry—"millinery and lace goods"—which reported March. July was the month of minimum employment for the industry as a whole and for women's clothing for both census years, while half of the industries reported November or December in 1914 and January in 1909.

Prevailing hours of labor.—In Table 7 the average number of wage earners reported for 1914 and 1909 for the clothing industry as a whole and for each separate industry has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment was classified as a total, even though a few employees worked a greater or smaller number of hours.

Table 7

INDUSTRY.	Census year.	AVERAGE NUMBER OF WAGE EARNERS.								
		Total.	In establishments where the prevailing hours of labor per week were—							
			48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72.	Over 72.
Clothing	1914	510,595	61,074	259,923	139,806	43,516	5,758	515	2	1
	1909	495,717	45,570	128,603	113,973	170,985	34,900	1,487	143	56
Clothing, men's	1914	173,747	35,114	87,907	37,719	10,344	2,524	137	1	1
	1909	191,183	27,103	29,473	49,325	67,727	16,924	565	59	7
Clothing, men's, buttonholes	1914	672	198	328	132	9	5	.....	.....	.....
	1909	830	80	133	230	314	67	6	.....	.....
Shirts	1914	51,972	4,051	12,562	27,222	7,363	439	335	.....	.....
	1909	48,513	3,035	6,184	7,059	26,897	5,321	8	.....	9
Furnishing goods, men's	1914	22,459	2,866	6,312	8,766	4,386	129	.....	.....	.....
	1909	15,920	3,008	4,352	2,866	4,545	1,149	.....	.....	.....
Collars and cuffs, men's	1914	10,100	90	758	8,180	233	839	.....	.....	.....
	1909	12,421	106	151	1,022	11,119	23	.....	.....	.....
Suspenders, garters, and elastic woven goods	1914	9,646	831	1,804	2,440	4,391	180	.....	.....	.....
	1909	10,141	830	1,735	919	5,374	1,281	.....	2	.....
Hats and caps, other than felt, straw, and wool	1914	7,322	634	4,258	1,633	728	69	.....	.....	.....
	1909	6,201	238	2,116	1,385	1,863	574	25	.....	.....
Clothing, women's	1914	168,907	11,741	123,066	28,780	4,785	508	26	1	.....
	1909	153,743	7,418	67,512	37,081	33,138	7,620	852	82	40
Corsets	1914	20,496	992	7,409	6,169	5,909	17	.....	.....	.....
	1909	17,564	291	2,727	4,714	9,357	475	.....	.....	.....
Millinery and lace goods	1914	45,274	4,557	15,519	18,765	5,368	1,048	17	.....	.....
	1909	39,201	3,461	14,220	9,372	10,651	1,466	31	.....	.....

The figures in the table emphasize a tendency toward a shortening of the working-day of wage earners. For the industry as a whole, 9.8 per cent of the total number of wage earners were employed in establishments where the prevailing hours of labor were more than 54 per week, as compared with 41.9 per cent in 1909. Each of the separate industries shows a decrease in the prevailing hours of labor per week. In 1914, 21.7 per cent of the wage earners employed in making men's clothing worked in establishments where the prevailing hours were 54 per week, whereas 25.8 per cent were so employed in 1909. In the manufacture of women's clothing, 3.1 per cent of the wage earners were in establishments where the prevailing hours were more than 54 per week, as compared with 27.1 per cent in 1909. Collars and cuffs shows the greatest decrease in the proportion working more than 54 hours per week, 10.6 per cent of the wage earners being so employed in 1914 and 90 per cent in 1909.

This change is due, in part, to a law regulating the hours of labor for women, which was passed between the census years by a number of states. In all but two of the industries ("clothing, men's, buttonholes," and "hats and caps, other than felt, straw, and wool") over 50 per cent of the wage earners were women.

Size of establishments.—Table 8 shows the size of establishments in 1914 and 1909, as measured by the number of wage earners employed, for the clothing industry as a whole and for each of the 10 separate branches.

In 1914, of the 14,953 establishments reported for the clothing industries, 549, or 3.7 per cent, employed no wage earners; 24 per cent employed from 1 to 5 wage earners; 36.3 per cent, 6 to 20 wage earners; 21.2 per cent, 21 to 50 wage earners; 8.9 per cent, 51 to 100 wage earners; and 5.8 per cent, over 100 wage earners. On the other hand, wage earners in establishments employing more than 100 wage earners formed 46.5 per cent of the total number of wage earners employed. The largest number of wage earners for any single group was in establishments employing from 21 to 50 wage earners each. There were 24 establishments each of which employed more than 1,000 wage earners; 11 of these were engaged in making men's clothing and 5 each in the manufacture of corsets and of shirts, and 1 each in three other industries.

Table 8

INDUSTRY.	Census year.	TOTAL.		ESTABLISHMENTS EMPLOYING—															
				No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.	
		Establishments.	Wage earners (average number).	Establishments.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
Clothing	1914	14,953	510,595	549	3,595	10,456	5,427	66,168	3,174	102,968	1,335	93,750	615	92,763	174	59,044	60	42,385	24	43,061
	1909	14,169	495,717	383	3,202	9,479	5,187	64,203	3,292	106,149	1,213	84,768	642	96,838	168	56,035	63	43,694	19	34,551
Clothing, men's	1914	4,830	173,747	202	1,195	3,370	1,769	21,620	1,007	32,683	372	25,838	190	29,668	53	18,196	31	21,787	11	20,585
	1909	5,584	191,183	168	1,237	3,482	2,158	26,883	1,319	42,044	406	28,215	191	29,887	67	22,609	27	18,679	11	19,384
Clothing, men's, buttonholes	1914	139	672	18	89	222	27	242	4	133	1	75	.....	.....	.....	.....	.....	.....	.....	.....
	1909	146	830	8	90	270	42	391	6	169	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shirts	1914	792	51,972	26	143	446	196	2,446	202	6,720	114	8,067	63	9,670	34	11,868	9	6,082	5	6,673
	1909	770	48,513	23	121	368	197	2,452	191	6,491	129	8,952	72	10,446	23	7,904	11	7,660	3	4,219
Furnishing goods, men's	1914	551	22,459	27	123	356	162	1,953	125	4,341	69	5,090	32	4,770	10	3,093	2	1,478	1	1,378
	1909	602	15,920	34	225	586	172	2,060	92	2,900	52	3,817	19	2,687	5	1,720	3	2,150	.....	.....
Collars and cuffs, men's	1914	35	10,100	1	5	9	8	94	5	165	3	197	7	992	2	896	3	2,352	1	5,395
	1909	47	12,421	1	5	14	9	105	6	231	6	482	9	1,509	6	1,857	4	2,663	1	5,560
Suspenders, garters, and elastic woven goods.	1914	216	9,646	23	74	200	56	641	21	693	20	1,527	12	1,919	7	2,372	3	2,294	.....	.....
	1909	251	10,141	9	87	229	83	928	30	980	12	829	22	3,432	6	2,221	2	1,522	.....	.....
Hats and caps, other than felt, straw, and wool.	1914	580	7,322	40	230	669	230	2,632	54	1,612	20	1,368	5	777	1	264	.....	.....	.....	.....
	1909	494	6,201	20	202	599	203	2,246	52	1,519	9	639	7	925	1	273	.....	.....	.....	.....
Clothing, women's	1914	5,564	168,907	127	1,024	3,183	2,132	28,795	1,436	46,324	562	39,428	233	33,841	44	14,395	5	3,448	1	1,493
	1909	4,558	153,743	68	770	2,476	1,668	21,337	1,268	41,250	486	33,715	247	36,485	45	14,529	5	2,886	1	1,065
Corsets	1914	167	20,496	10	50	124	32	402	20	634	15	1,062	16	2,666	15	5,096	4	2,975	5	7,537
	1909	138	17,564	7	40	122	28	375	18	573	9	707	17	2,676	8	2,713	8	6,066	3	4,332
Millinery and lace goods	1914	20,79	45,274	75	662	1,877	815	9,343	300	9,663	159	11,098	57	8,460	8	2,864	3	1,969	.....	.....
	1909	1,579	39,201	45	425	1,333	627	7,426	310	9,992	104	7,412	58	8,791	7	2,209	3	2,038	.....	.....

The establishments for which no wage earners were reported are comparatively small plants and represent two distinct classes—those where only proprietors and salaried employees are shown, the materials being furnished to contract shops for manufacture and the cost therefor reported as "contract work," and those in which the work was done by the proprietors or firm members. In some of these establishments a few wage earners were employed for a short time, but the number was so small and the period of employment so short that in computing the average number, as described in the "Explanation of terms," no wage earners could be shown.

Engines and power.—Table 9 shows, for 1914, 1909, and 1904, for the 10 industries combined and for each industry separately, the number and horsepower of engines or motors employed in generating power, including electric motors operated by purchased current. It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

Table 9

INDUSTRY.	Census year.	PRIMARY POWER.								ELECTRIC POWER GENERATED BY ESTABLISHMENTS REPORTING.	
		Total.	Owned.					Rented.			
			Steam engines[1] and turbines.		Internal-combustion engines.		Water wheels, turbines, and motors.	Electric.	Other.		
		Horsepower.	Number.	Horsepower.	Number.	Horsepower.	Number.	Horsepower.	Motors.	Horsepower.	Horsepower.	Motors.	Horsepower.
Clothing	1914	120,314	507	40,652	675	5,578	67	2,865	35,982	68,816	2,403	3,705	13,248
	1909	90,800	573	34,106	1,165	8,669	67	2,183	18,732	42,825	3,017	1,987	9,185
	1904	59,121	587	27,793	805	5,800	69	1,303	.....	20,491	3,734	956	3,517
Clothing, men's	1914	35,664	138	10,355	334	2,351	12	393	9,028	22,153	412	808	2,612
	1909	30,069	157	9,460	635	3,777	20	481	5,525	15,406	945	431	2,336
	1904	21,106	195	8,978	403	2,455	34	590	.....	8,081	1,002	95	821
Clothing, men's, buttonholes	1914	205	.....	.....	9	47	.....	.....	245	158	.....	2	1
	1909	176	.....	.....	14	61	.....	.....	98	106	9	.....	.....
	1904	137	1	3	13	51	.....	.....	.....	71	12	.....	.....
Shirts	1914	17,617	124	9,054	127	1,077	24	855	1,548	6,131	500	580	2,548
	1909	12,656	139	6,549	153	1,482	18	899	899	3,410	316	422	1,742
	1904	8,723	141	5,663	87	755	12	320	.....	1,500	485	485	935
Furnishing goods, men's	1914	5,880	32	2,008	49	488	1	15	1,450	3,329	40	115	918
	1909	3,983	25	1,339	65	576	1	2	838	1,986	80	42	473
	1904	3,061	30	1,552	49	547	3	18	.....	836	108	23	369
Collars and cuffs, men's	1914	3,896	21	2,984	.....	.....	.....	.....	95	375	537	367	1,392
	1909	3,234	26	2,879	2	15	1	15	39	226	99	186	850
	1904	2,360	24	1,962	4	50	1	10	.....	141	197	13	240

[1] Figures for horsepower include for 1909 and 1904 the amounts reported under the head of "other" owned power.

Table 9—Continued.

INDUSTRY.	Census year.	PRIMARY POWER. Total.	Owned. Steam engines and turbines.		Internal-combustion engines.		Water wheels, turbines, and motors.		Rented. Electric.		Other.	ELECTRIC POWER GENERATED BY ESTABLISHMENTS REPORTING.	
		Horsepower.	Number.	Horsepower.	Number.	Horsepower.	Number.	Horsepower.	Motors.	Horsepower.	Horsepower.	Motors.	Horsepower.
Suspenders, garters, and elastic woven goods	1914	7,524	47	3,954	4	81	19	796	480	2,670	23	651	1,664
	1909	4,899	52	3,283	9	149	12	463	234	776	228	147	549
Hats and caps, other than felt, straw, and wool	1914	1,339	4	150	5	25	1	3	1,426	1,135	26	17	65
	1909	990	7	295	8	34	.....	.....	909	631	30	11	70
	1904	797	14	326	7	19	.....	.....	.....	443	9	.....	.....
Clothing, women's	1914	28,396	51	2,632	100	1,125	3	88	16,683	21,029	522	133	728
	1909	22,294	83	4,112	219	1,958	9	206	7,893	15,175	843	182	910
	1904	14,916	103	4,422	190	1,593	16	309	.....	7,494	1,098	145	533
Corsets	1914	7,057	36	4,683	1	6	.....	.....	768	2,273	95	511	2,000
	1909	4,581	39	3,320	5	56	.....	.....	176	1,061	144	445	1,743
	1904	3,284	36	2,695	6	60	1	10	.....	262	257	21	172
Millinery and lace goods	1914	12,736	54	4,832	46	378	7	715	4,259	6,563	248	521	1,320
	1909	7,918	45	2,869	55	561	6	117	2,121	4,048	323	121	512
	1904	4,737	43	2,192	46	270	2	46	.....	1,663	566	174	447

The horsepower employed in the 10 industries increased by 103.5 per cent during the decade. The greatest increase is shown for rented electric power, which is specially adapted to the operation of sewing machines, cutting, buttonhole, and pressing machines, so largely used in the clothing industry. The proportion which rented electric power formed of the total increased from 34.7 per cent in 1904 to 57.2 per cent in 1914. Six of the ten industries reported this as their principal class of power, and in the case of the women's clothing it formed 84.6 per cent of the total power for 1914.

Local concentration of the industry.—The marked local concentration of the several branches of the industry in a few states and cities is shown in Table 10.

Table 10

INDUSTRY, STATE, AND CITY.	VALUE OF PRODUCTS. Amount. 1914	Amount. 1909	Per cent of United States total. 1914	1909
Clothing, men's, including shirts	$554,025,998	$568,076,635	.....	.....
New York	238,626,691	266,075,427	43.1	46.8
Illinois	89,144,448	89,472,755	16.1	15.8
New York, N. Y.	192,112,240	218,411,030	34.7	38.4
Chicago, Ill.	84,339,611	85,296,407	15.2	15.0
Baltimore, Md.	38,485,444	36,269,212	6.9	6.4
Philadelphia, Pa.	29,153,294	29,000,899	5.3	5.1
Rochester, N. Y.	[1] 19,760,253	18,878,508	3.6	3.3
Clothing, men's, buttonholes	637,728	780,720	.....	.....
New York	329,691	548,995	51.7	70.3
Pennsylvania	176,347	43,331	27.7	5.6
New York, N. Y.	308,967	485,870	48.4	62.2
Philadelphia, Pa.	176,347	43,331	27.7	5.6
Furnishing goods, men's	52,453,338	42,129,938	.....	.....
New York	23,205,074	19,763,785	44.2	46.9
New York, N. Y.	21,446,080	18,819,024	40.9	44.7
Collars and cuffs, men's	18,530,840	17,230,452	.....	.....
New York	17,719,796	15,897,376	95.6	92.3
Troy, N. Y.	16,702,773	13,638,745	90.1	79.2

INDUSTRY, STATE, AND CITY.	VALUE OF PRODUCTS. Amount. 1914	Amount. 1909	Per cent of United States total. 1914	1909
Suspenders, garters, and elastic woven goods	$24,432,753	$28,349,807	.....	.....
Massachusetts	6,323,312	10,106,940	25.9	35.7
New York	4,460,635	6,535,956	18.3	23.1
New York, N. Y.	4,363,633	6,355,760	17.9	22.4
Boston, Mass.	2,321,514	3,252,653	9.5	11.5
Hats and caps, other than felt, straw, and wool	18,593,221	13,689,338	.....	.....
New York	10,945,900	7,825,922	58.9	57.2
New York, N. Y.	10,523,884	7,514,924	56.6	54.9
Clothing, women's	473,888,354	384,751,649	.....	.....
New York	345,315,642	272,517,792	72.9	70.8
Pennsylvania	37,059,174	32,837,424	7.8	8.5
New York, N. Y.	339,842,534	266,477,381	71.7	69.3
Philadelphia, Pa.	34,142,518	30,132,842	7.2	7.8
Chicago, Ill.	19,211,137	15,676,925	4.1	4.1
Corsets	40,550,702	33,257,187	.....	.....
Connecticut	12,935,805	12,814,736	31.9	38.5
Bridgeport, Conn.	7,639,753	6,898,875	18.8	20.7
Millinery and lace goods	114,160,462	85,893,632	.....	.....
New York	72,328,556	52,106,200	63.4	60.7
New York, N. Y.	70,800,274	51,238,787	62.0	59.7

[1] Excludes statistics for one establishment, to avoid disclosure of individual operations.

New York City was much the largest producer in 8 of the 10 clothing industries included in this report, with proportions of the total value of products in 1914 as follows: Clothing, men's, 35.5 per cent; clothing, women's, 71.7 per cent; clothing, men's buttonholes, 48.4 per cent; furnishing goods, men's, 40.9 per cent; hats and caps, other than felt, straw, and wool, 56.6 per cent; millinery and lace goods, 62 per cent; shirts, 30.5 per cent; and suspenders, garters, and elastic woven goods, 17.9 per cent. Troy, N. Y., led in the manufacture of collars and cuffs, with 90.1 per cent. Corsets were produced chiefly in Connecticut, and the largest value of products shown for any city was for Bridgeport, with 18.8 per cent. The rank of the states in value of products coincides with that of the cities named located therein, except that for suspenders, garters, and elastic woven goods Massachusetts outranked New York.

CLOTHING, MEN'S.

Scope of the industry.—The industry includes establishments engaged chiefly in the manufacture of men's and youths' and of boys' clothing, such as overcoats, suits, coats, trousers, raincoats, and smoking and other jackets and "all other" covering outer garments, such as overalls, market frocks, butchers' aprons, uniforms, bathing suits, knee pants, gymnasium and sporting clothes, etc. Establishments making parts of clothing, such as shoulder pads, pockets, coat fronts, and padding, are included, causing some duplication in the value of products for the industry. The census reports for this industry, like those for the other clothing industries, are exclusive of the custom or made-to-measure establishments, large or small.

The principal statistics for "clothing, men's," are shown in Table 2 for the years 1914, 1909, and 1904. In 1914, in addition to the products shown, men's and youths' clothing, to the value of $4,709,176, boys' clothing, to the value of $205,304, and other clothing, to the value of $66,361, were reported by establishments assigned to other industries.

Subdivisions of the industry.—In 1914, in addition to the data for regular factories and contract shops, the establishments were classified within each group as "men's and youths'," "boys' " and "all other," according to the product of chief value, and the statistics for these subdivisions are given in Table 11.

Table 11

	CLOTHING, MEN'S.								
	Aggregate.	Regular factories.				Contract work.			
		Total.	Men's and youths'.	Boys'.	All other.	Total.	Men's and youths'.	Boys'.	All other.
Number of establishments	4,830	2,331	2,044	254	33	2,499	2,310	185	4
Persons engaged	200,809	147,192	136,971	9,577	644	53,617	48,765	4,795	57
Proprietors and firm members	6,121	2,786	2,370	381	35	3,335	3,071	258	6
Salaried employees	20,941	20,467	18,968	1,443	56	474	430	39	5
Wage earners (average number)	173,747	123,939	115,633	7,753	553	49,808	45,264	4,498	46
Primary horsepower	35,664	28,574	25,032	1,505	2,037	7,090	6,234	849	7
Capital	$224,050,401	$218,024,636	$202,670,344	$14,510,105	$844,187	$6,025,765	$5,469,373	$545,762	$10,630
Salaries and wages	113,799,336	89,940,547	83,636,474	6,012,838	291,235	23,859,289	21,890,645	1,934,219	34,425
Salaries	26,971,825	26,445,623	24,506,685	1,874,784	64,154	526,202	475,863	46,669	3,670
Wages	86,828,011	63,494,924	59,129,789	4,138,054	227,081	23,333,087	21,414,782	1,887,550	30,755
Paid for contract work	37,755,023	36,984,425	32,203,544	4,767,928	12,953	770,598	752,892	6,374	11,332
Rent and taxes (including internal revenue)	7,517,931	6,587,004	6,001,326	548,397	37,281	930,927	836,096	92,127	2,704
Cost of materials	230,031,690	228,117,103	209,146,528	18,106,940	863,635	1,914,587	1,590,818	321,563	2,206
Value of products	458,210,985	425,087,037	388,298,996	35,313,492	1,474,549	33,123,948	30,223,757	2,828,669	71,522
Value added by manufacture (value of products less cost of materials)	228,179,295	196,969,934	179,152,468	17,206,552	610,914	31,209,361	28,632,939	2,507,106	69,316

Among the manufacturing industries of the United States in 1914, men's clothing ranked thirteenth in value of products and seventh in average number of wage earners. It is probable that most of the amount shown as value of products under contract work is included in the value of products reported for the regular factories. This condition, however, does not exist so far as the number of wage earners is concerned. Of the 173,747 wage earners shown for the two branches combined, a little more than seven-tenths were employed in the regular factories, and slightly less than three-tenths in those engaged in contract work. Of the value shown for the three classes of products, for the regular factories and those engaged in contract work the proportions of the total are practically the same, the regular factories showing 91.3 per cent for "men's and youths'," 8.3 for "boys'," and 0.3 per cent for "all other," and correspondingly for contract work 91.2, 8.5, and 0.2 per cent.

In considering the divisions under regular factories, which were made on the basis of the product of chief value, allowance must be made for overlapping. Men's and youths' clothing valued at $2,473,019 was reported by establishments classified as "boys' " clothing, and boys' clothing valued at $4,940,689 and other clothing valued at $38,084 were reported by those shown as "men's and youths' " clothing.

Character of ownership.—Table 12 presents statistics concerning the character of ownership, or legal organization, of establishments in the industry for 1914 and 1909.

Table 12

CHARACTER OF OWNERSHIP.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
Total	1914	4,830	173,747	$458,210,985	$228,179,295
	1909	5,584	191,183	485,677,493	233,154,926
Individuals	1914	2,521	40,824	68,112,542	39,839,739
	1909	3,228	53,984	82,651,720	51,115,815
Corporations	1914	713	78,106	218,034,370	102,908,111
	1909	623	59,278	155,015,455	70,447,085
All others	1914	1,596	54,817	172,064,073	85,431,445
	1909	1,733	77,921	248,010,318	111,592,026
Per cent distribution:					
Individuals	1914	52.2	23.5	14.9	17.5
	1909	57.8	28.2	17.0	21.9
Corporations	1914	14.8	45.0	47.6	45.1
	1909	11.2	31.0	31.9	30.2
All others	1914	33.0	31.5	37.6	37.4
	1909	31.0	40.8	51.1	47.9

Detail state table.—Table 13 presents, for 1914, statistics in detail for men's clothing for the United States and for each state that can be shown without the disclosure of the operations of individual establishments.

TABLE 13.—CLOTHING, MEN'S—DETAIL STATEMENT

	STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.
			Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.		
						Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male.	Female	
									Maximum month.	Minimum month.						
1	United States	4,830	200,809	6,121	3,049	12,670	5,222	173,747	Fe 181,952	No 162,913	179,232	85,331	91,975	594	1,332	$224,050,401
2	Alabama	6	253	6	7	9	2	229	Mh 260	No 168	256	22	231	.....	3	184,002
3	California	71	2,382	150	31	124	40	2,037	Mh 2,095	De 1,752	1,984	422	1,550	2	10	1,926,642
4	Connecticut	20	442	27	8	9	7	391	Mh 436	De 367	370	116	254	.....	.....	197,527
5	Delaware	3	58	1	3	4	.....	50	De [3] 54	Ap 45	54	3	51	.....	.....	24,875
6	Georgia	17	1,316	14	32	74	9	1,187	Mh 1,402	No 779	1,374	143	1,209	5	17	1,254,361
7	Illinois	578	39,997	464	562	2,906	1,913	34,152	Je 35,267	No 33,135	34,365	15,874	17,900	171	420	39,083,039
8	Indiana	31	2,914	21	60	93	73	2,667	Mh [3] 2,811	No 2,488	2,646	506	2,135	3	2	2,684,209
9	Iowa	19	1,007	8	34	63	22	880	Se 929	No 815	1,024	62	948	1	13	982,592
10	Kansas	11	416	2	15	15	7	377	Ja 432	Je 296	423	27	396	.....	.....	1,035,929
11	Kentucky	60	2,979	57	63	249	38	2,572	Au 2,771	No 2,178	2,716	655	2,034	1	26	3,059,206
12	Louisiana	10	852	17	9	32	19	775	Ja 825	No 709	704	66	633	1	4	724,937
13	Maine	21	463	21	6	4	2	430	No 450	Se 362	466	116	350	.....	.....	320,679
14	Maryland	253	14,808	355	147	1,069	328	12,909	Ja 14,114	No 10,246	13,105	6,161	6,597	190	157	17,363,715
15	Massachusetts	213	6,575	257	117	306	135	5,760	Mh 6,027	No 5,546	6,011	2,865	3,105	10	31	7,198,335
16	Michigan	23	2,382	19	36	138	98	2,091	Fe 2,430	Jy 1,813	2,144	224	1,920	.....	.....	3,085,514
17	Minnesota	32	2,505	30	36	275	45	2,119	Ja 2,299	No 1,891	1,975	382	1,593	.....	.....	2,364,520
18	Missouri	71	6,434	40	185	516	100	5,593	Ja 6,000	Oc 5,092	5,956	1,716	4,176	1	63	7,251,408
19	New Hampshire	8	395	9	9	29	7	341	Mh [3] 355	No [3] 328	342	26	316	.....	.....	380,892
20	New Jersey	118	5,100	153	50	140	42	4,715	Se 4,970	De 4,569	4,961	2,602	2,342	8	9	2,470,802
21	New York	2,357	74,943	3,375	931	4,194	1,516	64,927	Fe 68,260	No 61,157	68,211	43,437	24,419	80	275	88,448,993
22	North Carolina	9	432	2	17	23	5	385	Je 442	De 258	392	70	300	.....	22	338,138
23	Ohio	224	10,208	263	174	756	324	8,691	Ap 9,172	De 8,175	8,839	3,050	5,732	12	45	13,205,410
24	Pennsylvania	504	12,341	719	180	914	292	10,236	Mh 10,759	Oc 9,774	10,631	5,137	5,273	79	142	16,798,163
25	South Carolina	4	132	1	9	6	.....	116	Mh 143	No 82	125	23	102	.....	.....	141,474
26	Tennessee	26	1,806	12	55	136	14	1,589	Fe 1,715	No 1,355	1,627	228	1,364	10	25	1,778,953
27	Texas	18	1,160	12	33	37	16	1,062	Ap [3] 1,155	No 903	1,089	76	1,013	.....	.....	1,083,804
28	Vermont	6	499	3	11	16	7	462	Fe 486	Se 396	472	42	430	.....	.....	628,830
29	Virginia	29	1,383	17	40	81	21	1,224	Mh 1,460	Se 971	1,220	142	1,067	5	6	1,490,127
30	Washington	6	327	3	6	30	1	287	Ja 331	No 232	253	15	238	.....	.....	457,677
31	West Virginia	7	591	2	28	46	24	491	Mh 521	Au 449	513	108	405	.....	.....	824,054
32	Wisconsin	55	3,759	44	103	317	91	3,204	Fe 3,369	Oc 2,914	3,178	774	2,327	15	62	5,708,018
33	All other states [4]	20	1,950	17	52	59	24	1,798	.....	.....	1,806	241	1,565	.....	.....	1,553,576

[1] Owned power only.

[2] Includes rented power, other than electric.

[3] Same number reported for one or more other months.

FOR THE INDUSTRY, BY STATES: 1914.

EXPENSES.								Value of products.	Value added by manufacture.	POWER.						
Salaries and wages.			For contract work.	Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.	
Officials.	Clerks, etc.	Wage earners.		Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.[1]	Internal-combustion engines.[2]	Water wheels and motors.	Electric (rented).		
$8,579,219	$18,392,606	$86,828,011	$37,755,023	$6,694,558	$823,373	$228,364,182	$1,667,508	$458,210,985	$228,179,295	35,664	10,355	2,763	393	22,153	2,612	1
12,570	13,406	81,031	.....	6,700	1,175	260,020	1,254	412,890	151,616	133	60	.....	40	33	.....	2
63,967	121,995	1,028,676	121,834	85,942	12,321	2,535,562	16,413	4,728,895	2,176,920	495	127	.....	.....	368	35	3
9,576	9,580	143,560	4,500	8,835	398	246,718	5,038	483,793	232,037	86	.....	10	.....	76	.....	4
6,500	4,135	6,748	21,447	.....	236	1,200	1,150	42,060	39,710	37	18	4	.....	15	5	5
50,175	64,591	346,511	19,907	22,172	6,681	1,526,604	9,781	2,371,145	834,760	369	.....	32	25	312	30	6
2,278,700	4,678,088	19,578,872	5,381,862	1,386,584	189,171	40,185,091	318,133	87,512,126	47,008,902	4,828	805	50	.....	3,973	454	7
137,910	134,297	1,177,248	26,024	64,160	16,392	3,200,388	21,413	5,360,015	2,147,214	712	13	81	.....	618	30	8
52,154	49,823	300,070	377	13,123	7,019	1,040,292	11,282	1,619,777	568,203	334	50	24	.....	260	1	9
20,071	15,313	122,111	.....	7,559	9,527	474,079	4,965	725,992	246,948	140	15	.....	.....	125	.....	10
140,289	272,248	988,262	31,940	24,305	23,199	2,345,199	21,023	4,641,491	2,275,269	557	210	46	.....	301	1	11
17,800	40,345	197,003	40,861	8,768	5,621	814,649	7,025	1,281,482	459,808	105	.....	.....	.....	105	5	12
9,660	3,849	174,114	9,201	4,695	847	645,397	7,035	1,002,460	350,028	183	50	4	50	79	.....	13
384,890	1,504,084	5,614,428	1,717,249	475,274	60,364	14,911,804	105,513	28,999,838	13,982,521	4,468	3,660	68	.....	740	681	14
297,480	463,877	3,074,907	1,422,666	269,956	81,499	8,962,650	70,507	16,217,687	7,184,530	1,245	507	67	.....	671	163	15
115,726	131,014	929,318	23,235	21,434	25,230	2,752,319	16,839	4,734,975	1,965,817	939	740	1	.....	198	57	16
80,077	228,254	844,951	17,013	59,363	15,757	3,105,394	18,533	4,738,607	1,614,680	422	76	.....	.....	346	62	17
343,884	676,751	2,222,750	217,880	143,989	34,799	7,672,405	40,552	13,484,374	5,771,417	1,541	430	120	6	985	89	18
12,290	34,779	121,087	.....	2,320	1,820	530,751	4,337	787,058	251,920	89	.....	9	8	72	2	19
92,694	130,043	1,794,158	441,826	73,666	25,866	2,638,100	44,115	5,953,706	3,271,491	786	74	138	.....	574	.....	20
2,773,949	6,626,280	35,070,250	23,720,983	3,088,327	130,949	93,940,385	651,275	197,368,800	102,777,140	10,966	2,370	1,443	161	6,992	541	21
20,198	22,603	109,223	224	4,476	4,264	369,631	4,088	603,538	229,819	128	60	8	.....	60	20	22
519,925	1,257,481	4,167,555	1,551,305	339,198	56,968	11,929,096	63,157	24,063,468	12,071,215	1,884	370	310	.....	1,204	206	23
437,728	934,264	4,967,976	2,439,901	384,780	27,026	14,317,759	113,097	28,033,167	13,602,311	2,457	484	253	28	1,692	183	24
10,865	1,836	31,144	7,046	973	998	151,696	1,283	214,559	61,580	80	.....	10	.....	70	.....	25
99,404	171,115	457,984	58,407	19,664	6,608	1,611,983	13,500	2,872,617	1,247,134	561	157	10	75	319	.....	26
63,998	64,127	394,339	.....	18,305	5,924	1,272,920	11,683	2,086,136	801,533	260	.....	12	.....	248	.....	27
24,370	21,084	176,681	.....	2,960	4,455	574,333	3,566	952,413	374,514	89	.....	.....	.....	89	.....	28
54,896	77,966	369,201	142,741	10,133	7,427	1,718,955	26,469	2,673,734	928,310	333	4	28	.....	301	9	29
12,728	26,194	125,547	.....	10,646	2,333	476,649	2,177	721,113	242,287	163	.....	.....	.....	163	.....	30
56,806	36,550	219,244	186,843	35,970	4,203	1,429,999	4,873	2,172,955	738,083	116	.....	.....	.....	116	.....	31
291,293	498,094	1,288,726	137,610	65,802	43,377	4,593,928	30,782	7,985,697	3,360,987	694	65	23	.....	606	34	32
86,646	78,540	704,336	17,141	34,479	11,009	2,128,226	16,600	3,355,417	1,210,591	464	10	12	.....	442	4	33

[1] All other states embrace: Arkansas, 2 establishments; Colorado, 3; District of Columbia, 2; Mississippi, 1; Nebraska, 3; Oklahoma, 3; Oregon, 1; Rhode Island, 2; South Dakota, 1; Utah, 2.

CLOTHING, MEN'S, BUTTONHOLES.

This industry covers establishments making buttonholes in clothing owned by others. The value of products represents the amount received for work done. Inasmuch as buttonholes are usually made in establishments which manufacture the clothing, only a comparatively small portion of the total value of such work is shown under this heading. The statistics were first shown separately at the census of 1889.

The machine, for making buttonholes in clothing, makes eyelet-end buttonholes from one-half of an inch to one and one-half inches long, is automatic, runs equally well with any kind of materials, and is operated easily. There are several styles of these machines and also machines for making blind or imitation buttonholes, such as are seen on the cuffs of coat sleeves. The machine was first patented by Humphrey in 1862, but it was not until the Reese machine was patented about 20 years later that the art of making buttonholes by machinery was brought to its present state of perfection. The principal statistics for the industry are given in Table 2.

Table 14 presents, for 1914, statistics in detail for the industry "clothing, men's, buttonholes" for the United States and for each state that can be shown without disclosing the operations of individual establishments.

TABLE 14.—CLOTHING, MEN'S, BUTTONHOLES—DETAIL STATEMENT FOR THE INDUSTRY, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.	EXPENSES.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of— Maximum month.	Number, 15th day of— Minimum month.		Male.	Female.	Male.	Female.		Officials.	Clerks, etc.
United States.	139	856	169	10	2	3	672	Oc 691	De 653	678	368	295	4	11	$224,381	$12,176	$1,796
Illinois	6	12	6	.....	.....	.....	6	Oc [1] 7	Ja [1] 4	7	3	4	.....	.....	4,000	.....	.....
Maryland	15	67	15	.....	1	1	50	Jy 53	Mh 46	49	34	13	2	.....	16,617	.....	1,243
Massachusetts	3	9	4	.....	1	.....	4	Mh [1] 5	Je [1] 3	5	3	2	.....	.....	1,050	.....	260
New Jersey	3	8	3	.....	.....	.....	5	([2]) 5	([2]) 5	5	4	1	.....	.....	1,089	.....	.....
New York	84	474	105	8	.....	.....	361	Oc 372	De 345	370	262	103	2	3	150,880	10,196	.....
Ohio	10	98	13	2	.....	2	81	Fe [1] 84	De 75	75	14	61	.....	.....	11,113	1,980	288
Pennsylvania	15	183	20	.....	.....	.....	163	Je 165	Ja [1] 162	163	47	108	.....	8	37,862	.....	.....
All other states [3]	3	5	3	.....	.....	.....	2	.....	.....	4	1	3	.....	.....	1,770	.....	.....

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					
	Salaries and wages—Con.	For contract work.	Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage earners.		Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.	Internal-combustion engines.	Water wheels and motors.	Electric (rented).	
United States.	$326,322	$524	$29,863	$1,257	$79,816	$10,196	$637,728	$547,716	205	.....	47	.....	158	1
Illinois	3,248	.....	480	24	721	340	8,931	7,870	6	.....	.....	.....	6	.....
Maryland	21,209	.....	1,475	37	4,209	1,115	43,480	38,156	17	.....	.....	.....	17	.....
Massachusetts	1,560	.....	288	.....	326	200	6,072	5,546	3	.....	.....	.....	3	.....
New Jersey	2,273	.....	468	2	390	99	6,650	6,161	2	.....	.....	.....	2	.....
New York	173,060	524	21,956	707	33,637	6,452	329,691	289,602	138	.....	46	.....	92	1
Ohio	32,490	.....	1,440	372	9,341	503	62,982	53,138	14	.....	.....	.....	14	.....
Pennsylvania	91,870	.....	3,492	.....	30,822	1,386	176,347	144,139	22	.....	1	.....	21	.....
All other states [3]	612	.....	264	115	370	101	3,575	3,104	3	.....	.....	.....	3	.....

[1] Same number reported for one or more other months. [2] Same number reported throughout the year. [3] All other states embrace: Missouri, 2 establishments; Wisconsin, 1.

SHIRTS.

This industry includes the manufacture of all kinds of shirts for men and boys, except those made in knitting mills. The making of shirt bosoms and other parts is included, together with stitching done under contract on materials owned by others. The principal statistics of the industry for the censuses of 1914, 1909, and 1904 are given in Table 2 and, in addition to the product shown, shirts, valued at $4,976,189 in 1914 and at $6,801,460 in 1909 were reported by establishments whose chief product was men's clothing; and shirts, valued at $3,977,340 in 1914 and at $4,940,464 in 1909, were reported by establishments assigned to other industries.

Table 15 presents, for 1914, detailed statistics for "shirts" for the United States and for each state that can be shown without disclosing individual operations.

TABLE 15.—SHIRTS—DETAIL STATEMENT FOR THE INDUSTRY, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc. Male.	Clerks, etc. Female.	Wage earners. Average number.	Wage earners. Number, 15th day of— Maximum month.	Wage earners. Number, 15th day of— Minimum month.	WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY. Total.	16 and over. Male.	16 and over. Female.	Under 16. Male.	Under 16. Female.	Capital.	EXPENSES. Salaries and wages. Officials.	Clerks, etc.
United States.	792	56,980	957	839	1,971	1,241	51,972	Mh 56,659	Se 47,754	53,908	10,663	41,744	275	1,226	$50,943,841	$1,706,965	$2,835,127
California	25	509	34	10	22	12	431	Fe 497	Jy 402	420	63	357	.....	.....	559,832	19,117	33,967
Connecticut	8	967	9	20	14	10	914	Fe 965	Au 877	904	238	640	5	21	1,278,842	58,791	80,954
Delaware	9	262	13	4	.....	1	244	Mh [1] 294	Au 111	305	11	294	.....	.....	47,220	1,753	300
Georgia	4	124	1	6	1	.....	116	Oc 126	Jy 98	124	23	99	2	.....	53,762	8,510	1,200
Illinois	26	1,056	14	31	27	17	967	Mh 1,208	Au 825	1,067	354	690	2	21	614,633	79,494	35,856
Indiana	10	2,710	3	24	36	54	2,593	Ja 2,811	De 2,351	2,653	216	2,346	2	89	1,893,335	70,902	67,202
Iowa	3	82	1	2	3	2	74	Mh 97	No [1] 11	87	4	83	.....	.....	26,229	3,000	2,804
Kansas	5	194	3	6	9	7	169	Fe 209	De 118	176	22	154	.....	.....	95,698	9,660	12,744
Louisiana	7	78	5	2	10	3	58	My 63	Au 52	74	7	62	.....	5	41,380	1,140	4,664
Maine	6	657	4	4	15	17	617	Ja 713	No 391	638	114	520	4	.....	819,533	24,200	27,387
Maryland	48	5,522	67	48	149	105	5,153	Mh 5,929	Oc 4,294	5,461	881	4,364	58	158	5,337,550	90,740	245,487
Massachusetts	14	1,956	16	25	12	18	1,885	De 2,023	Au 1,680	1,874	841	1,022	1	10	1,780,445	38,921	21,397
Michigan	16	490	10	19	29	21	411	Mh 456	Au 305	455	52	403	.....	.....	208,907	23,664	25,304
Minnesota	13	411	4	24	26	8	349	Mh 387	No 326	330	156	171	.....	3	485,699	31,649	21,338
Missouri	19	2,639	5	40	33	14	2,547	Ja 3,222	Se 1,358	3,109	279	2,778	.....	52	1,303,819	73,791	46,908
Nebraska	5	451	2	11	8	7	423	Mh 465	Oc 372	397	34	363	.....	.....	164,199	15,824	8,126
New Jersey	34	3,839	44	45	148	100	3,502	Mh 3,578	Au 3,341	3,558	652	2,747	54	105	4,273,907	115,227	254,006
New York	270	18,463	344	241	853	582	16,443	Fe 18,027	Au 14,693	17,014	4,406	12,402	17	189	21,353,103	525,875	1,240,929
Ohio	33	2,360	22	65	132	74	2,067	Fe 2,289	No [1] 1,899	1,963	151	1,772	7	33	1,701,797	165,965	124,981
Pennsylvania	195	11,929	332	161	380	166	10,890	Mh 11,480	Au 10,247	11,204	1,888	8,693	115	508	6,871,536	222,229	519,496
Tennessee	6	72	3	4	6	1	58	Mh 65	Jy 46	56	2	42	2	10	44,966	7,600	5,895
Vermont	4	539	.....	5	3	5	526	Ja 618	Oc 288	447	86	358	2	1	212,032	11,510	6,651
Virginia	3	67	3	4	1	1	58	Mh 95	Se 6	102	12	78	4	8	13,384	3,500	100
Washington	3	130	1	3	7	1	118	Fe 142	Oc 103	111	14	97	.....	.....	170,771	6,540	13,901
Wisconsin	4	410	1	11	15	3	380	Ja 423	Jy 343	363	29	334	.....	.....	623,282	39,962	9,661
All other states [2]	22	1,063	16	24	32	12	979	.....	.....	1,016	128	875	.....	13	867,980	47,991	53,236

STATE.	EXPENSES—continued. Salaries and wages—Con. Wage earners.	For contract work.	Rent and taxes. Rent of factory.	Taxes, including internal revenue and corporation income.	For materials. Principal materials.	Fuel and rent of power.	Value of products.	Value added by manufacture.	POWER. Primary horsepower. Total.	Steam engines. [3]	Internal-combustion engines. [4]	Water wheels and motors. [3]	Electric (rented).	Electric horsepower generated in establishments reporting.
United States.	$19,169,697	$5,973,892	$1,069,545	$128,234	$50,148,535	$516,439	$95,815,013	$45,150,039	17,617	9,054	1,577	855	6,131	2,545
California	215,119	7,679	20,185	3,444	399,247	4,335	834,616	431,034	101	.....	.....	11	90	.....
Connecticut	404,936	18,985	4,700	4,423	1,055,788	12,269	2,144,356	1,076,299	408	300	.....	.....	108	168
Delaware	50,773	.....	426	186	11,797	1,973	90,536	76,766	59	20	20	.....	19	.....
Georgia	32,871	.....	3,954	216	85,972	1,368	147,241	59,901	25	.....	.....	.....	25	.....
Illinois	440,209	2,122	35,899	2,565	797,653	9,589	1,632,322	825,080	314	95	.....	2	217	53
Indiana	773,121	.....	7,690	5,346	2,141,894	23,036	3,487,921	1,322,991	665	485	20	.....	160	75
Iowa	22,110	.....	1,560	121	13,069	569	50,094	36,456	35	.....	30	.....	5	.....
Kansas	51,105	.....	1,704	1,149	50,600	2,297	161,042	108,145	46	.....	19	.....	36	.....
Louisiana	19,712	2,080	2,343	210	41,473	684	77,787	35,630	25	.....	.....	.....	25	.....
Maine	263,497	.....	1,850	3,958	540,218	7,954	1,170,665	622,493	107	.....	26	20	61	16
Maryland	1,702,548	195,883	98,487	14,648	5,538,906	41,894	10,048,037	4,467,237	1,642	1,021	178	.....	443	433
Massachusetts	778,577	.....	19,525	7,888	1,367,015	14,953	3,396,080	2,014,112	450	378	5	.....	67	96
Michigan	164,881	23,215	17,559	2,652	222,833	3,847	571,255	344,575	136	.....	.....	.....	136	.....
Minnesota	145,108	12,512	12,872	3,355	513,197	3,304	877,715	361,214	168	112	.....	.....	56	24
Missouri	990,161	.....	51,225	4,763	2,294,336	28,844	3,815,735	1,492,555	1,019	810	15	.....	194	462
Nebraska	151,655	15,261	14,510	844	595,262	4,989	869,244	268,993	125	.....	310	92	125	4
New Jersey	1,335,257	538,191	76,942	13,515	2,515,556	30,741	5,593,657	3,047,360	751	2,399	431	580	349	6
New York	6,595,459	4,574,793	464,641	30,670	22,344,385	194,696	41,257,891	18,718,810	5,055	.....	.....	.....	1,645	379
Ohio	735,232	38,115	52,863	7,681	1,747,403	16,678	3,558,361	1,794,280	1,064	550	47	.....	467	.....
Pennsylvania	3,422,099	426,628	150,542	8,991	5,839,331	94,403	12,337,163	6,403,429	4,121	1,794	680	.....	1,647	700
Tennessee	19,302	.....	2,860	160	30,599	725	92,055	60,731	18	.....	.....	.....	18	.....
Vermont	243,469	33,129	1,721	1,125	154,075	4,433	489,530	331,022	208	70	.....	67	71	.....
Virginia	13,867	500	775	40	45,819	429	91,354	45,106	7	.....	.....	.....	7	.....
Washington	47,425	.....	6,668	740	124,421	374	252,964	128,169	17	.....	.....	.....	17	.....
Wisconsin	168,139	.....	1,860	4,476	366,334	2,797	702,765	333,634	164	150	.....	.....	14	76
All other states [2]	383,065	84,799	16,184	5,068	1,311,352	9,258	2,064,627	744,017	887	560	23	175	129	55

[1] Same number reported for one or more other months.
[2] All other states embrace: Colorado, 3 establishments; District of Columbia, 2; Kentucky, 3; New Hampshire, 2; North Carolina, 1; Oklahoma, 3; Oregon, 1; Rhode Island, 2; South Dakota, 1; Texas, 2; Utah, 1; West Virginia, 1.
[3] Owned power only.
[4] Includes rented power, other than electric.

FURNISHING GOODS, MEN'S.

Under this heading are included the manufacture of men's neckwear, belts, handkerchiefs, cloth gloves and mittens, cloth underwear, bath robes, pajamas, athletic underwear, etc. Prior to 1904 statistics for collars and cuffs were included with the industry, and prior to 1909 the manufacture of suspenders, garters, and similar articles was also included to a considerable extent. In 1909 these were shown as subclassifications of the industry but in 1914 as separate industries.

The principal statistics of the industry are given in Table 2, for 1914, 1909, and 1904. In addition to the products shown for 1914, furnishing goods, valued at $6,204,405, were made by establishments engaged primarily in the manufacture of other products.

Table 16 presents, for 1914, statistics in detail of the industry for the United States and for each state that can be shown without disclosing the operations of individual establishments.

TABLE 16.—FURNISHING GOODS, MEN'S—DETAIL STATEMENT FOR THE INDUSTRY, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.	EXPENSES.	
					Clerks, etc.		Wage earners.				16 and over.		Under 16.			Salaries and wages.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Male.	Female.	Average number.	Number, 15th day of— Maximum month.	Number, 15th day of— Minimum month.	Total.	Male.	Female.	Male.	Female.		Officials.	Clerks, etc.
United States	551	25,964	565	574	1,595	771	22,459	Oc 23,439	Au 21,625	23,220	3,898	18,760	98	464	$27,887,725	$1,357,202	$2,299,800
California	10	298	10	9	29	17	233	No 296	Fe 204	286	48	235	.....	3	662,537	19,490	31,888
Delaware	5	250	2	8	2	4	234	Je 270	Au 62	260	27	231	.....	2	220,878	11,760	2,488
Illinois	44	2,465	42	42	209	94	2,078	Mh 2,174	Je 1,939	2,167	324	1,763	15	65	2,843,260	123,291	307,209
Indiana	27	2,148	7	40	42	23	2,036	De 2,103	My 1,950	2,104	139	1,890	7	68	1,520,451	72,456	50,609
Iowa	7	589	3	10	29	9	538	Ap 578	No 461	552	61	465	7	19	583,491	18,981	37,626
Maryland	15	678	19	15	55	28	561	My 595	De[1] 535	564	110	426	2	26	625,603	27,230	61,927
Massachusetts	13	507	12	14	57	36	388	No 458	Ja 332	442	49	382	1	10	511,705	31,870	61,208
Michigan	16	231	13	12	8	11	187	No 220	Ap 164	208	25	183	.....	.....	210,125	16,237	7,984
Missouri	16	959	1	33	34	18	873	Ja 1,038	Ap 813	919	162	740	5	12	721,470	67,679	42,303
New Jersey	22	4,258	24	38	195	81	3,920	Oc 4,024	De 3,761	3,792	407	3,283	8	94	5,542,670	117,712	300,758
New York	235	8,099	286	211	699	350	6,553	Mh 6,929	Jy 6,235	6,745	1,836	4,838	10	61	10,247,631	604,470	1,107,790
North Carolina	3	24	2	3	1	.....	18	Je 24	De 2	23	3	20	.....	.....	17,928	1,980	420
Ohio	40	2,548	28	49	66	37	2,368	No 2,533	My 2,263	2,535	335	2,164	13	23	1,833,882	98,649	91,035
Pennsylvania	54	1,789	72	46	92	32	1,527	No 1,685	Au 1,336	1,646	237	1,316	23	70	1,372,785	77,860	112,199
Rhode Island	4	40	5	2	2	2	29	De[1] 32	Au 14	32	4	28	.....	.....	33,585	1,840	4,132
Washington	4	97	6	2	7	1	81	Se 85	Fe 75	87	19	68	.....	.....	17,928	2,482	5,698
Wisconsin	4	116	2	5	7	6	96	Mh 109	De 74	95	19	73	.....	3	141,301	5,330	8,331
All other states[2]	32	888	31	35	61	22	739	.....	.....	763	93	655	7	8	713,486	57,885	66,195

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					
	Salaries and wages—Con.		Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage earners.	For contract work.	Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.[3]	Internal-combustion engines.[4]	Water wheels and motors.[3]	Electric (rented).	
United States	$8,415,480	$1,134,951	$684,600	$90,590	$31,398,218	$195,224	$52,453,338	$20,859,896	5,880	2,008	528	15	3,329	918
California	117,343	75	16,804	4,036	439,281	1,995	849,844	408,568	68	.....	.....	.....	68	.....
Delaware	55,451	9,121	2,844	360	206,379	3,350	324,067	114,338	79	.....	59	.....	20	14
Illinois	823,419	3,241	82,376	14,718	3,267,862	14,177	5,063,472	1,781,433	677	500	.....	.....	177	274
Indiana	522,208	.....	15,384	9,287	1,866,778	19,918	2,996,195	1,109,499	630	66	33	.....	531	34
Iowa	174,550	95,763	3,672	6,370	581,272	6,300	1,201,295	613,723	158	.....	.....	.....	158	.....
Maryland	191,523	.....	15,086	1,553	606,660	4,790	1,142,429	530,979	94	35	.....	.....	59	11
Massachusetts	170,825	63,724	15,481	2,299	785,328	3,623	1,268,806	479,855	77	.....	10	.....	67	.....
Michigan	67,140	5,023	7,191	1,843	276,969	2,322	419,677	140,386	104	12	6	.....	86	.....
Missouri	250,188	25,000	26,165	2,883	989,995	4,691	1,573,680	578,994	122	.....	12	.....	110	.....
New Jersey	1,419,729	24,018	20,488	14,551	3,536,274	26,507	6,241,485	2,678,704	1,229	1,005	92	15	117	512
New York	3,211,390	338,418	400,548	10,243	13,740,223	62,404	23,205,074	9,402,447	1,001	150	29	.....	822	25
North Carolina	6,080	.....	350	138	27,480	120	40,488	12,888	11	.....	.....	.....	11	.....
Ohio	618,075	18,804	23,829	12,162	2,096,287	18,007	3,296,867	1,182,573	714	.....	168	.....	546	.....
Pennsylvania	468,013	49,611	35,559	4,325	1,708,164	13,332	2,758,916	1,037,420	567	215	91	.....	261	48
Rhode Island	10,388	180	646	117	27,705	1,182	55,069	26,182	33	10	.....	.....	23	.....
Washington	29,035	.....	2,970	415	103,255	739	168,904	64,910	42	.....	.....	.....	42	.....
Wisconsin	29,921	.....	1,452	721	113,228	1,071	169,997	55,698	25	.....	.....	.....	25	.....
All other states[2]	250,202	1,973	13,725	4,569	1,025,078	10,696	1,677,073	641,299	249	15	28	.....	206	.....

[1] Same number reported for one or more other months.
[2] All other states embrace: Arkansas, 2 establishments; Connecticut, 2; Georgia, 2; Kansas, 1; Kentucky, 2; Louisiana, 2; Maine, 5; Minnesota, 3; New Hampshire, 1; Oklahoma, 1; Oregon, 2; South Carolina, 1; South Dakota, 1; Tennessee, 3; Utah, 1; Vermont, 3.
[3] Owned power only.
[4] Includes rented power, other than electric.

COLLARS AND CUFFS, MEN'S.

The principal statistics for the industry for 1914, 1909, and 1904 are shown in Table 2. In addition, 18 establishments in 1914 manufactured collars and cuffs as subsidiary products, to the value of $1,892,284.

Since its inception, Troy has been the center for the manufacture of collars and cuffs. The extent to which it is confined to New York state, and especially to Troy, is shown in the following table:

Table 17

	United States.	New York state.					
		Total.	Per cent of United States total.	Troy.		Remainder of state.	
				Total.	Per cent of state total.	Total.	Per cent of state total.
Number of establishments	35	24	68.6	15	62.5	9	37.5
Persons engaged	10,936	10,554	96.5	9,667	91.6	887	8.4
Proprietors and firm members	18	13	72.2	4	30.8	9	69.2
Salaried employees	818	748	91.4	695	92.9	53	7.1
Wage earners (average number)	10,100	9,793	97.0	8,968	91.6	825	8.4
Primary horsepower	3,896	3,599	92.4	3,388	94.1	211	5.9
Capital	$15,025,246	$14,174,682	94.3	$13,160,357	92.4	$1,074,325	7.6
Salaries and wages	5,482,023	5,264,301	96.0	4,798,391	91.1	465,910	8.9
Salaries	987,877	906,611	91.8	817,651	90.2	88,960	9.8
Wages	4,494,146	4,357,690	97.0	3,980,740	91.3	376,950	8.7
Paid for contract work	1,045,341	1,044,161	99.9	1,037,824	99.4	6,337	0.6
Rent and taxes (including internal revenue)	100,885	86,201	85.4	79,187	91.9	7,014	8.1
Cost of materials	6,565,578	6,061,845	92.3	5,751,832	94.9	310,013	5.1
Value of products	18,530,840	17,719,795	95.6	16,702,773	94.3	1,017,022	5.7
Value added by manufacture (value of products less cost of materials)	11,965,262	11,657,951	97.4	10,950,941	93.9	707,010	6.1

Of the 35 establishments reported for the United States, 24 were in New York and 15 of these were located in Troy. This city reported 92.4 per cent of the capital, 91.1 per cent of the salaries and wages, and 94.3 per cent of the value of products reported by New York state. The state's proportions of the totals for the United States for these items were even larger, being 94.3, 96, and 95.6 per cent, respectively.

Table 18 gives, for 1914, detail statistics concerning the collar and cuff industry for the United States and for the two states that can be shown without the disclosure of the operations of individual establishments.

TABLE 18.—COLLARS AND CUFFS, MEN'S—DETAIL STATEMENT FOR THE INDUSTRY, BY STATES, 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.	EXPENSES.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of— Maximum month.	Number, 15th day of— Minimum month.		Male.	Female.	Male.	Female.		Officials.	Clerks, etc.
United States.	35	10,936	18	208	365	245	10,100	Oc 10,856	Jy 9,631	10,046	2,570	7,448	9	19	$15,025,246	$560,914	$427,993
New York	24	10,554	13	192	328	228	9,793	Oc 10,411	Jy 9,370	9,754	2,463	7,263	9	19	14,174,682	522,963	393,648
Pennsylvania	4	38	4	2	6	2	24	Fe [1] 25	De 21	21	5	16	.....	.....	82,279	2,042	2,973
All other states [2]	7	344	1	14	31	15	283	.....	.....	271	102	169	.....	.....	768,285	35,908	41,242

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					
	Salaries and wages—Con.		Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage earners.	For contract work.	Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines. [3]	Internal-combustion engines. [4]	Water wheels and motors. [3]	Electric (rented).	
United States.	$4,494,146	$1,045,341	$32,773	$68,112	$6,446,660	$118,918	$18,530,840	$11,965,262	3,896	2,984	537	.....	375	1,392
New York	4,357,690	1,044,161	31,073	55,128	5,952,803	109,042	17,719,796	11,657,951	3,599	2,709	537	.....	353	1,376
Pennsylvania	9,556	.....	480	81	20,648	473	45,414	24,293	15	.....	.....	.....	15	.....
All other states [2]	126,900	1,180	1,220	12,903	473,209	9,403	765,630	283,018	282	275	.....	.....	7	16

[1] Same number reported for one or more other months.
[2] All other states embrace: Connecticut, 2 establishments; Massachusetts, 1; Nebraska, 1; Ohio, 2; Vermont, 1.
[3] Owned power only.
[4] Includes rented power, other than electric.

SUSPENDERS, GARTERS, AND ELASTIC WOVEN GOODS.

This industry was first shown separately in 1909, prior to which census it was included with men's furnishing goods, millinery and lace goods, and rubber and elastic goods. In 1914 only those establishments manufacturing suspenders, garters, and the elastic webbing from which these articles are made, were included in this industry. In addition to the products shown in Table 2, suspenders, garters, and elastic woven goods, to the value of $694,035, were manufactured in 1914 by establishments whose chief products were such that they were assigned to other classifications.

Table 19 gives, for 1914, detail statistics for suspenders, garters, and elastic woven goods, for the United States and for each state that can be shown without disclosing the operations of individual establishments.

TABLE 19.—SUSPENDERS, GARTERS, AND ELASTIC WOVEN GOODS—DETAIL STATEMENT FOR THE INDUSTRY, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.	EXPENSES.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of— Maximum month.	Number, 15th day of— Minimum month.		Male.	Female.	Male.	Female.		Officials.	Clerks, etc.
United States.	216	11,038	199	311	557	325	9,646	Mh 10,027	De 8,886	9,282	3,345	5,594	85	258	$16,343,686	$762,638	$892,836
Illinois	14	885	16	23	98	51	697	Jy 765	De 627	628	34	553	1	40	807,946	52,089	127,337
Massachusetts	30	3,207	18	77	97	87	2,928	Mh 3,071	De 2,697	2,947	1,036	1,787	32	92	5,060,141	226,849	190,667
New Jersey	6	265	2	14	16	9	224	Fe 255	De 190	211	89	117	3	2	900,528	22,269	15,618
New York	87	1,510	105	46	132	78	1,149	Jy 1,197	Ja 1,061	1,149	546	589	6	8	1,624,117	95,418	155,199
Ohio	11	364	8	13	24	20	299	Jy 328	Ja 255	274	33	241	.....	.....	448,651	21,956	37,576
Pennsylvania	22	737	23	17	87	23	587	De 687	Ja 477	696	186	459	9	42	787,627	50,880	190,515
Rhode Island	6	640	1	8	3	7	621	Mh 685	De 495	495	225	246	8	16	1,067,603	37,807	18,775
All other states[1]	40	3,430	26	113	100	50	3,141	.....	.....	2,882	1,196	1,602	26	58	5,647,073	255,370	157,159

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					
	Salaries and wages—Con.		Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage earners.	For contract work.	Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.[2]	Internal-combustion engines.[2]	Water wheels and motors.[2]	Electric (rented).	
United States.	$4,276,126	$236,543	$176,024	$120,912	$15,019,747	$171,447	$24,432,753	$9,241,559	7,524	3,954	104	796	2,670	1,664
Illinois	237,396	137,286	20,952	4,452	1,213,048	6,966	2,076,556	856,542	135	.....	.....	.....	135	2
Massachusetts	1,411,316	24,730	21,014	60,406	3,533,586	47,100	6,323,312	2,742,626	1,650	1,230	38	100	282	594
New Jersey	108,761	3,000	3,640	3,791	321,180	4,749	551,802	225,873	219	190	10	.....	19	122
New York	521,502	64,612	89,372	694	3,012,178	13,134	4,460,635	1,435,323	156	.....	.....	.....	156	.....
Ohio	104,453	.....	6,290	2,419	582,177	3,655	938,702	352,870	153	20	.....	.....	133	1
Pennsylvania	208,819	.....	21,538	1,331	1,400,618	5,735	2,171,156	764,803	149	75	10	.....	64	.....
Rhode Island	302,102	6,850	2,151	8,501	721,448	12,642	1,222,132	488,042	1,528	250	40	100	1,138	.....
All other states[1]	1,381,777	65	11,067	39,318	4,235,512	77,466	6,688,458	2,375,490	3,534	2,189	6	596	743	945

[1] All other states embrace: Colorado, 1 establishment; Connecticut, 13; Indiana, 1; Iowa, 2; Louisiana, 1; Maine, 1; Maryland, 2; Michigan, 4; Minnesota, 3; Missouri, 2; Nebraska, 1; Tennessee, 3; Vermont, 1; West Virginia, 1; Wisconsin, 4.
[2] Owned power only.
[3] Includes rented power, other than electric.

HATS AND CAPS, OTHER THAN FELT, STRAW, AND WOOL.

This industry includes all kinds of hats and caps made of cloth, leather, or silk, which are intended for men, youths, and boys. Women's hats made of these materials are included under other classifications, such as millinery and lace goods, etc. The consistent growth of this industry from 1904 to 1914 is shown in Table 2. During the 10-year period the value of products increased 43.5 per cent.

In addition to the products shown, establishments assigned to other industries, principally fur goods, straw hats, fur-felt hats, hosiery and knit goods, and men's clothing, reported "hats and caps, other than felt, straw, and wool," to the value of $1,173,240 in 1914 and to the value of $804,008 in 1909.

Table 20 gives, for 1914, detail statistics concerning the hats and caps, other than felt, straw, and wool, for the United States and for the states that can be shown without disclosing individual operations.

TABLE 20.—HATS AND CAPS, OTHER THAN FELT, STRAW, AND WOOL—DETAIL STATEMENT FOR THE INDUSTRY, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc. Male.	Clerks, etc. Female.	Wage earners. Average number.	Wage earners. Number, 15th day of— Maximum month.	Wage earners. Number, 15th day of— Minimum month.	WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY. Total.	16 and over. Male.	16 and over. Female.	Under 16. Male.	Under 16. Female.	Capital.	EXPENSES. Salaries and wages. Officials.	Salaries and wages. Clerks, etc.
United States.	580	8,942	797	235	399	189	7,322	Se 7,502	No 7,152	7,585	5,479	2,068	24	14	$6,846,996	$396,938	$527,416
California	15	144	18	8	18	3	97	Se 103	Fe 92	106	57	47	2	.....	114,071	12,623	13,731
Connecticut	9	129	15	7	8	5	94	Ja [1] 98	Jy [1] 90	98	75	23	.....	.....	132,874	8,696	16,519
Delaware	3	12	4	.....	.....	2	6	Au [1] 8	Ja 3	8	4	4	.....	.....	18,806	.....	439
Illinois	36	564	46	23	20	10	465	Je 496	Ja 393	458	316	137	5	.....	268,116	34,560	21,614
Maryland	22	143	26	3	10	2	102	My 111	Jy 95	111	82	25	3	1	96,449	2,080	10,388
Massachusetts	38	374	49	12	10	15	288	Je 308	No 256	285	194	87	2	2	196,197	14,472	19,982
Michigan	5	91	9	1	5	3	73	Se [1] 77	Ja 64	69	51	18	.....	.....	98,205	968	13,800
Minnesota	9	146	13	3	1	2	127	Je 144	Ja 104	142	49	93	.....	.....	65,423	3,900	1,560
Missouri	13	261	14	17	15	3	212	No 224	Ja 192	220	126	93	1	.....	197,097	22,160	14,129
New Jersey	17	345	26	7	51	15	246	Fe [1] 295	Ap 191	309	188	121	.....	.....	354,449	13,170	24,251
New York	293	4,996	419	103	193	94	4,187	Se 4,394	No 4,042	4,301	3,501	797	1	2	3,529,209	155,679	202,425
Ohio	28	532	42	20	25	14	431	Fe 470	Se 354	442	176	264	.....	2	431,700	38,388	31,263
Pennsylvania	66	907	88	18	30	15	756	De 777	Au 730	789	521	253	9	6	816,274	39,354	30,676
Wisconsin	5	80	7	2	1	.....	70	Je [1] 72	Mh 66	71	50	21	.....	.....	57,760	2,820	560
All other states [2]	21	218	21	11	12	6	168	.....	.....	176	89	85	1	1	151,095	17,385	13,067

STATE.	EXPENSES—continued. Salaries and wages—Con. Wage earners.	Salaries and wages—Con. For contract work.	Rent and taxes. Rent of factory.	Rent and taxes. Taxes, including internal revenue and corporation income.	For materials. Principal materials.	For materials. Fuel and rent of power.	Value of products.	Value added by manufacture.	POWER. Primary horsepower. Total.	Steam engines. [3]	Internal-combustion engines. [4]	Water wheels and motors. [3]	Electric (rented).	Electric horsepower generated in establishments reporting.
United States.	$4,507,521	$109,008	$441,870	$12,967	$9,166,739	$100,838	$18,593,221	$9,325,644	1,339	150	51	3	1,135	65
California	64,137	.....	8,324	200	115,349	1,736	273,556	156,471	69	.....	.....	.....	69	.....
Connecticut	55,610	.....	5,272	488	119,116	1,559	288,165	167,490	28	.....	9	.....	19	.....
Delaware	3,786	.....	552	52	9,042	231	17,443	8,170	5	.....	.....	.....	5	.....
Illinois	304,967	.....	34,248	964	511,387	5,297	1,126,735	610,051	81	.....	.....	.....	81	.....
Maryland	57,757	4,540	5,946	547	94,154	1,884	229,635	133,597	20	.....	.....	.....	20	.....
Massachusetts	167,793	.....	21,653	767	399,826	4,541	737,294	332,927	52	.....	.....	.....	52	.....
Michigan	49,305	.....	5,050	465	105,456	1,435	216,994	110,103	10	.....	.....	.....	10	.....
Minnesota	52,589	.....	6,380	1,043	157,695	2,662	240,849	80,492	31	.....	.....	.....	31	.....
Missouri	133,048	.....	10,450	911	353,423	2,757	580,823	224,643	26	.....	.....	.....	26	.....
New Jersey	172,008	.....	5,234	1,252	283,082	3,611	608,386	321,693	82	40	4	.....	38	.....
New York	2,643,273	68,887	264,170	2,450	5,367,769	55,428	10,945,900	5,522,703	720	100	34	3	583	58
Ohio	224,419	.....	21,782	1,916	568,985	5,476	1,040,277	465,816	56	.....	.....	.....	56	.....
Pennsylvania	446,338	35,581	38,045	1,010	849,613	11,150	1,759,284	898,521	113	10	4	.....	99	.....
Wisconsin	42,970	.....	2,820	317	71,842	1,233	152,858	79,783	13	.....	.....	.....	13	.....
All other states [2]	89,521	.....	11,944	585	160,000	1,838	375,022	213,184	31	.....	.....	.....	31	7

[1] Same number reported for one or more other months.
[2] All other states embrace: Colorado, 2 establishments; District of Columbia, 1; Indiana, 3; Iowa, 2; Kentucky, 2; Nebraska, 2; Oregon, 2; Rhode Island, 3; Virginia, 1; Washington, 3.
[3] Owned power only.
[4] Includes rented power, other than electric.

CLOTHING, WOMEN'S.

Scope of the industry.—Prior to 1880 the manufacture of women's ready-made clothing was confined almost entirely to cloaks. In the early eighties ladies' ready-made suits were introduced, and later shirt waists, and by 1900 all articles making up women's wearing apparel were on the market ready-made. In 1914 this industry includes the manufacture of a great variety of clothing for women, girls, and children, not only complete suits, but also dresses, skirts, petticoats, kimonas, dressing sacks, wrappers, jackets, cloaks, capes, underwear (except knit underwear), infants' and children's clothing, shirt waists, linings, corset stays, bathing suits, belts, dress shields, and similar articles. The principal data for the industry for 1914, 1909, and 1904 are shown in Table 2. In 1914, in addition to the value of the product given, women's clothing, to the value of $7,267,408, was manufactured by establishments in other industries.

Subdivisions of the industry.—Table 21 gives, for 1914, the principal statistics for those establishments which manufacture clothing from their own materials and for those which work exclusively on materials furnished by others. It also shows a segregation of establishments by their product of chief value.

Table 21 CLOTHING, WOMEN'S.

	Total.	Regular factories.					Contract work.				
		Suits, skirts, and cloaks.	Shirt waists and dresses, except house dresses.	Undergarments and petticoats.	Wrappers and house dresses.	All other.	Suits, skirts, and cloaks.	Shirt waists and dresses, except house dresses.	Undergarments and petticoats.	Wrappers and house dresses.	All other.
Number of establishments	5,564	2,053	1,369	439	253	356	631	265	51	50	97
Persons engaged	198,685	72,278	67,337	23,205	8,091	8,973	8,345	5,848	1,294	1,361	1,953
Proprietors and firm members	7,516	2,881	1,778	540	366	409	900	375	67	70	130
Salaried employees	22,262	9,929	7,348	2,543	1,052	1,088	127	91	23	18	43
Wage earners (average number)	168,907	59,468	58,211	20,122	6,673	7,476	7,318	5,382	1,204	1,273	1,780
Primary horsepower	28,396	8,380	8,788	4,527	1,530	1,790	1,300	1,231	236	294	320
Capital	$153,549,295	$64,614,805	$47,110,304	$23,829,517	$8,148,619	$7,225,754	$1,158,274	$795,827	$176,822	$189,180	$300,193
Salaries and wages	118,696,524	54,307,666	37,946,361	11,531,971	3,571,283	4,370,152	3,898,597	1,366,126	428,686	445,154	830,528
Salaries	26,122,882	12,263,637	8,220,141	3,179,345	975,359	1,220,504	107,971	78,979	18,066	21,642	37,238
Wages	92,573,642	42,044,029	29,726,220	8,352,626	2,595,924	3,149,648	3,790,626	1,287,147	410,620	423,512	793,290
Paid for contract work	15,843,554	9,285,820	4,626,013	688,293	720,442	441,991	71,319	3,164	250	920	5,342
Rent and taxes (including internal revenue)	10,058,805	4,623,558	3,229,737	925,385	388,349	385,817	257,459	153,903	26,185	20,676	47,736
Cost of materials	252,345,040	120,978,024	79,148,604	31,831,580	9,772,099	9,599,334	492,925	179,605	118,334	41,326	183,209
Value of products	473,888,354	223,257,541	150,105,051	52,686,568	17,900,226	18,055,929	6,232,243	3,011,683	689,817	591,486	1,357,810
Value added by manufacture (value of products less cost of materials)	221,543,314	102,279,517	70,956,447	20,854,988	8,128,127	8,456,595	5,739,318	2,832,078	571,483	550,160	1,174,602

A large proportion of every item shown in the table is reported by the regular factories. The shops doing contract work reported only 9.5 per cent of the total persons engaged and 1.8 per cent of the total capital invested, while the value of products shown represents only the amount received for work performed.

The most important group shown is the one reporting the manufacture of suits, skirts, and cloaks. In addition to the products shown in the table for the several groups, there were such articles as are listed under the several headings manufactured by establishments in other industries, and there were also articles made and reported by the different groups of this industry that do not show under the proper headings, because the group classification was made according to the article of chief value. The value of these subsidiary products is as follows: Suits, skirts, and cloaks, to the value of $1,686,382, were reported by other subgroups of the women's clothing industry and to the value of $1,645,447 by establishments assigned to other industries, principally men's clothing. Waists and dresses, except house dresses, to the value of $1,871,668, were reported by other subgroups of the industry, and to the value of $925,373 by establishments assigned to other classifications, principally men's clothing. Undergarments and petticoats, to the value of $1,659,733, were reported by other subgroups of the industry, and to the value of $1,737,725 by establishments assigned to other classifications, principally men's clothing, hosiery and knit goods, men's furnishing goods, and soap; knit underwear is covered by the hosiery and knit goods industry. Wrappers and house dresses (which include kimonas, negligees, and dressing sacks) were reported to the value of $604,045 by other subgroups and to the value of $173,099 by establishments assigned to other classifications, principally men's clothing and cotton goods. "All other," which includes infants and children's wearing apparel, aprons, bathing caps and suits, gymnasium suits, dress shields, etc., was reported to the value of $1,381,109 by other groups of the industry, and to the value of $2,785,764 by establishments manufacturing as their products of chief value, men's clothing, shirts, leather goods, etc.

Character of ownership.—Table 22 presents statistics concerning the character of ownership, or legal organization, of establishments in the women's clothing industry, for 1914 and 1909.

Table 22

CHARACTER OF OWNERSHIP.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
Total	1914	5,564	168,907	$473,888,354	$221,543,314
	1909	4,558	153,743	384,751,649	175,963,423
Individuals	1914	2,389	45,899	125,920,757	58,520,322
	1909	2,094	46,998	113,173,532	52,036,523
Corporations	1914	936	52,278	137,778,796	65,597,372
	1909	583	37,610	90,696,932	42,131,366
All others	1914	2,239	70,730	210,188,801	97,425,620
	1909	1,881	69,135	180,881,185	81,795,534
Per cent distribution:					
Individuals	1914	42.9	27.2	26.6	26.4
	1909	45.9	30.6	29.4	29.6
Corporations	1914	16.8	31.0	29.1	29.6
	1909	12.8	24.5	23.6	23.9
All others	1914	40.2	41.9	44.4	44.0
	1909	41.3	45.0	47.0	46.5

Of the entire number of establishments reported for the industry in 1914, 42.9 per cent were under individual control, 16.8 per cent were operated by corporations, and 40.2 per cent were under "all other" forms of ownership. This last group includes general and limited partnerships, cooperative associations, and any other form of ownership not classed as "individuals" or "corporations." Establishments in this group reported 41.9 per cent of the average number of wage earners and 44.4 per cent of the value of products. The large percentage for "all other" is caused by such a condition in New York state, which reported 68.9 per cent of the total number of establishments, 64.2 per cent of the total average number of wage earners, and 72.9 per cent of the total value of products, and naturally affected the totals for the United States.

Detail state table.—Table 23 presents, for 1914, statistics in detail for women's clothing for the United States and for each state that can be shown without disclosing individual operations.

TABLE 23.—CLOTHING, WOMEN'S—DETAIL STATEMENT FOR THE INDUSTRY, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.	EXPENSES.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of— Maximum month.	Number, 15th day of— Minimum month.		Male.	Female.	Male.	Female.		Officials.	Clerks, etc.
United States.	5,564	198,685	7,516	3,928	11,263	7,071	168,907	Mh 188,526	Jy 145,362	175,302	63,241	111,034	120	907	$153,549,295	$8,942,364	$17,180,518
California	86	1,407	234	37	44	32	1,060	Oc 1,152	Ja 950	1,121	412	709	.....	.....	1,087,549	63,300	65,633
Colorado	3	62	1	3	3	.....	55	Oc 60	Au [1] 50	55	9	46	.....	.....	29,564	6,180	4,695
Connecticut	19	1,476	24	19	41	55	1,337	Mh 1,535	De 1,056	1,218	291	893	9	25	754,589	45,442	80,358
Georgia	7	243	5	10	11	2	215	Mh 261	Oc 165	238	14	223	.....	1	154,120	19,142	16,619
Illinois	241	9,590	273	265	514	425	8,113	Oc 9,153	Ja 7,203	8,377	2,588	5,662	9	118	6,674,493	587,108	724,755
Indiana	19	1,142	12	24	54	37	1,015	Fe 1,105	No 928	913	60	844	.....	9	700,822	63,382	82,779
Iowa	14	670	5	22	59	21	563	Fe 638	No 476	529	116	411	1	1	713,459	39,744	84,039
Kentucky	12	373	14	18	9	12	320	Oc 380	De 196	314	94	220	.....	.....	245,156	31,305	15,040
Louisiana	4	125	3	4	4	2	112	Ja 135	De 60	60	9	51	.....	.....	157,856	7,860	2,900
Maine	7	339	1	14	5	4	315	Mh 393	Au 233	301	43	258	.....	.....	232,644	21,955	9,696
Maryland	90	3,469	120	61	164	98	3,026	Mh 3,258	No 2,803	3,191	833	2,330	1	27	2,484,760	103,236	194,095
Massachusetts	202	7,038	236	187	300	239	6,076	Ap 6,747	Au 4,995	6,083	1,493	4,546	.....	44	4,942,052	362,882	483,352
Michigan	32	1,936	24	38	103	99	1,672	Ja 2,715	Jy 1,113	1,459	91	1,348	4	16	1,599,762	85,166	169,685
Minnesota	8	117	5	6	8	4	94	Oc 101	Mh 85	94	24	69	1	.....	101,785	11,380	11,143
Missouri	74	2,699	54	115	117	58	2,355	Mh 2,558	No 2,045	2,431	488	1,885	1	57	2,087,188	220,378	164,569
New Hampshire	4	219	1	6	7	8	197	Ap 243	De 156	175	25	150	.....	.....	401,706	10,410	27,798
New Jersey	183	6,040	237	113	168	99	5,423	Mh 5,863	Jy 4,656	5,864	989	4,780	12	83	3,136,821	197,893	238,379
New York	3,835	128,969	5,320	2,377	7,852	5,027	108,303	Mh 121,969	Jy 90,119	114,238	46,749	67,139	50	300	102,521,450	5,470,951	12,032,766
Ohio	170	11,283	167	240	791	310	9,775	Mh 10,740	De 7,878	9,630	3,404	6,215	.....	11	9,559,029	767,347	1,424,193
Pennsylvania	483	19,600	715	293	910	465	17,217	Mh 19,288	Jy 15,152	17,414	5,203	11,982	27	202	14,117,695	686,727	1,218,823
Texas	4	81	3	2	7	2	67	Jy 81	De 42	59	29	30	.....	.....	67,880	3,200	4,850
Vermont	7	446	3	11	25	20	387	Ap 448	Au 285	438	37	401	.....	.....	408,377	26,215	41,049
Washington	12	192	8	11	10	4	159	Mh 179	De 119	153	49	103	1	.....	225,275	24,506	14,137
West Virginia	6	211	8	13	18	3	169	Ap 189	No 142	147	35	112	.....	.....	339,721	16,340	11,532
Wisconsin	21	639	23	23	31	41	521	Se 585	Ja 482	522	101	412	.....	9	472,276	46,554	47,961
All other states [2]	21	319	20	16	8	4	271	.....	.....	278	55	215	4	4	333,266	23,761	8,672

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					
	Salaries and wages—Con.		Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage earners.	For contract work.	Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines [3]	Internal-combustion engines [4]	Water wheels and motors [3]	Electric (rented).	
United States.	$92,573,642	$15,843,554	$9,736,972	$321,833	$250,588,226	$1,756,814	$473,888,354	$221,543,314	28,396	2,632	1,647	88	24,029	728
California	611,227	34,697	70,920	7,056	1,371,052	9,529	2,732,867	1,352,286	222	.....	.....	.....	222	.....
Colorado	21,414	.....	1,680	74	37,441	470	70,250	32,339	11	.....	.....	.....	11	.....
Connecticut	464,991	400	12,511	4,168	688,260	12,000	1,596,888	896,628	383	240	.....	.....	143	30
Georgia	76,527	.....	5,393	1,010	180,577	1,945	348,288	165,766	53	.....	.....	.....	53	.....
Illinois	4,530,374	329,009	441,094	26,514	11,138,900	80,296	20,750,550	9,531,354	1,163	.....	.....	.....	1,163	5
Indiana	329,022	.....	20,799	4,088	759,376	6,134	1,453,753	688,243	193	.....	.....	.....	193	.....
Iowa	219,608	477	6,170	3,468	741,969	8,872	1,220,222	469,381	97	.....	10	.....	87	6
Kentucky	148,364	.....	11,030	4,272	269,722	3,306	562,617	289,589	55	.....	.....	.....	55	.....
Louisiana	28,904	10,452	2,580	740	119,665	1,201	209,294	88,428	6	.....	.....	.....	6	.....
Maine	103,812	26,514	6,007	1,131	226,431	3,014	471,696	242,251	48	.....	.....	.....	48	.....
Maryland	1,169,527	80,228	107,039	7,159	3,271,101	24,968	6,015,195	2,719,126	475	.....	10	.....	465	.....
Massachusetts	2,966,453	98,099	252,786	27,139	7,605,410	58,815	13,982,587	6,318,362	1,202	183	113	.....	906	6
Michigan	715,153	1,550	23,827	13,798	1,176,124	17,723	2,660,507	1,466,660	552	145	.....	.....	407	.....
Minnesota	45,300	.....	6,298	657	92,126	1,294	209,009	115,589	23	.....	.....	.....	23	.....
Missouri	1,093,312	1,832	101,060	7,593	3,014,298	19,855	5,517,015	2,482,862	602	100	6	.....	496	.....
New Hampshire	87,078	.....	1,296	1,553	197,349	2,578	379,102	179,175	118	57	.....	.....	61	.....
New Jersey	2,003,609	34,783	106,776	7,978	2,895,144	56,814	6,768,076	3,816,118	1,300	449	224	8	619	103
New York	64,128,360	14,399,256	7,586,483	120,167	182,482,422	1,197,632	345,315,642	161,635,588	16,523	713	624	.....	15,186	266
Ohio	5,136,614	311,154	281,359	61,377	12,008,712	81,127	22,881,753	10,791,914	1,719	30	351	.....	1,338	56
Pennsylvania	8,090,555	427,303	647,172	11,159	20,190,233	152,158	37,059,174	16,716,783	3,108	610	269	.....	2,229	186
Texas	31,189	.....	2,210	193	87,490	853	154,848	66,505	20	.....	2	.....	18	.....
Vermont	125,227	.....	372	2,912	349,116	4,030	691,201	338,055	203	70	.....	80	53	70
Washington	102,889	1,550	12,063	1,298	205,447	1,347	413,280	206,486	35	.....	.....	.....	35	.....
West Virginia	55,721	77,000	2,396	1,212	595,255	3,271	867,425	268,899	64	.....	25	.....	39	.....
Wisconsin	186,570	500	22,808	1,987	546,823	4,253	979,806	428,730	92	.....	.....	.....	92	.....
All other states [2]	101,842	8,750	4,843	3,130	337,783	3,329	577,309	236,197	129	35	13	.....	81	.....

[1] Same number reported for one or more other months.
[2] All other states embrace: Arkansas, 1 establishment; Kansas, 1; Nebraska, 4; North Carolina, 1; Rhode Island, 5; South Carolina, 1; Tennessee, 1; Utah, 1; Virginia 6,
[3] Owned power only.
[4] Includes rented power, other than electric.

CORSETS.

This industry includes the manufacture of corsets, corset waists, brassieres, stays, and similar articles. The first census at which the manufacture of these articles was reported separately was that of 1879, when there were 113 establishments, employing 8,802 wage earners, with products valued at $6,494,705.

Table 2 shows the principal statistics for the industry for the censuses of 1914, 1909, and 1904. In addition to the products shown for 1914, five establishments, engaged chiefly in the manufacture of women's clothing, manufactured corsets to the value of $114,959.

Table 24 presents, for 1914, statistics in detail for "corsets" for the United States and for each state that can be shown without disclosing the operations of individual establishments.

TABLE 24.—CORSETS—DETAIL STATEMENT FOR THE INDUSTRY, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.	EXPENSES.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of— Maximum month.	Number, 15th day of— Minimum month.		Male.	Female.	Male.	Female.		Officials.	Clerks, etc.
United States.	167	23,146	101	470	1,043	1,036	20,496	Ap 22,315	De 17,749	19,418	2,528	16,300	44	546	$23,892,756	$1,618,673	$2,649,526
Connecticut	21	7,928	9	132	304	185	7,298	Ap 7,655	No 6,561	7,258	1,031	5,886	31	310	8,151,296	464,818	658,755
Illinois	19	2,253	12	39	114	114	1,974	Mh 2,137	De 1,708	1,880	178	1,622	4	76	1,870,827	148,200	248,758
Massachusetts	11	2,512	2	33	124	55	2,298	Mh 2,631	De 1,818	2,310	258	1,953	.....	99	2,594,362	172,535	251,226
Michigan	16	2,406	10	57	83	107	2,149	Fe 2,612	De 1,671	1,913	342	1,552	6	13	3,595,620	290,551	387,163
New Jersey	13	2,912	4	37	159	120	2,592	Mh 2,844	No 2,213	2,362	200	2,126	.....	36	2,917,517	171,963	351,919
New York	60	3,383	47	103	198	156	2,879	Ap 3,373	No 2,475	2,469	352	2,111	.....	6	3,421,576	240,131	522,825
Ohio	4	39	4	1	1	2	31	Je [1] 39	De 21	23	1	22	.....	.....	31,190	2,850	1,837
Pennsylvania	10	1,054	8	41	19	183	803	Ap 970	No 637	646	121	522	1	2	652,174	77,843	116,465
All other states [2]	13	659	5	27	41	114	472	.....	.....	557	45	506	2	4	658,194	49,782	110,578

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					
	Salaries and wages—Con.		Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage earners.	For contract work.	Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines. [3]	Internal-combustion engines. [4]	Water wheels and motors. [3]	Electric (rented).	
United States.	$7,976,721	$183,966	$421,457	$161,817	$19,427,362	$159,171	$40,550,702	$20,964,169	7,057	4,683	101	.....	2,273	2,000
Connecticut	2,796,764	.....	36,145	54,818	7,529,107	45,456	12,935,805	5,361,242	2,970	2,660	25	.....	285	1,234
Illinois	715,439	.....	46,704	8,552	2,043,692	19,101	3,978,982	1,916,189	341	50	.....	.....	291	.....
Massachusetts	905,648	.....	27,747	39,102	1,890,412	11,524	4,580,839	2,678,903	690	610	.....	.....	80	290
Michigan	873,009	87,071	8,826	27,532	1,876,817	21,732	4,981,581	3,053,032	959	668	25	.....	266	437
New Jersey	1,007,782	6,000	49,889	12,426	2,287,369	19,548	4,737,474	2,430,557	987	630	11	.....	346	.....
New York	1,214,894	90,895	221,541	16,641	2,889,456	29,497	6,393,526	3,474,573	769	65	40	.....	664	39
Ohio	9,509	.....	2,270	97	8,413	441	32,519	23,665	6	.....	.....	.....	6	.....
Pennsylvania	274,692	.....	17,697	1,219	400,845	4,832	1,973,760	1,568,083	159	.....	.....	.....	159	.....
All other states [2]	178,964	.....	10,638	1,430	501,251	7,040	936,216	427,925	176	.....	.....	.....	176	.....

[1] Same number reported for one or more other months.
[2] All other states embrace: California, 2 establishments; District of Columbia, 1; Indiana, 1; Iowa, 1; Minnesota, 4; Missouri, 1; Nebraska, 1; North Dakota, 1; Tennessee, 1.
[3] Owned power only.
[4] Includes rented power, other than electric.

MILLINERY AND LACE GOODS.

Establishments covered by this classification make a wide variety of articles, including (1) embroideries; (2) hat and bonnet frames and made hats, trimmed and untrimmed, for women and girls; (3) dress, cloak, and millinery trimmings, braids, and fringes; (4) ladies' collars and neckwear; and (5) lace work, plaitings, ruchings, and veilings; crocheted goods; handmade curtains of muslin and lace; ladies' and children's belts, other than leather; and handkerchiefs. Custom millinery shops are not included. The machine production of cotton laces and lace curtains is shown as a separate classification in 1914, and prior to that was included with the cotton-goods industry rather than with the millinery and lace goods industry. The production of untrimmed hats for women is in part covered by other classifications—"hats, wool-felt"; "hats, fur-felt"; and "hats, straw."

Table 2 gives the principal statistics of the industry, from 1904 to 1914. In addition to the value of products shown, millinery and lace goods, to the value of $6,942,639, were reported in 1914 and to the value of $4,991,448 in 1909 by establishments assigned to other classifications.

Table 25 presents statistics for the five groups into which the industry is divided, each establishment being assigned according to the product of chief value.

Table 25

	MILLINERY AND LACE GOODS.					
	Total.	Embroideries.	Trimmed hats and hat frames.	Dress and cloak trimmings, braids, and fringes.	Women's neckwear.	All other.
Number of establishments	2,079	773	634	218	150	304
Persons engaged	53,936	13,571	19,954	3,457	6,601	10,353
Proprietors and firm members	2,335	870	703	264	177	321
Salaried employees	6,327	1,369	2,649	496	880	933
Wage earners (average number)	45,274	11,332	16,602	2,697	5,544	9,099
Primary horsepower	12,736	4,576	4,131	1,009	662	2,358
Capital	$53,100,601	$15,487,321	$17,676,716	$3,529,716	$5,387,267	$11,019,581
Salaries and wages	28,893,839	7,184,324	11,948,381	1,674,510	3,525,462	4,561,162
Salaries	7,348,702	1,603,043	2,989,875	489,320	1,122,131	1,144,333
Wages	21,545,137	5,581,281	8,958,506	1,185,190	2,403,331	3,416,829
Paid for contract work	1,919,756	1,369,396	69,807	65,076	154,562	260,915
Rent and taxes (including internal revenue)	2,850,732	615,970	1,255,956	203,699	329,406	445,701
Cost of materials	57,675,921	9,125,243	26,638,794	4,495,611	6,984,137	10,432,136
Value of products	114,160,462	23,393,470	48,361,908	7,810,105	13,896,486	20,698,493
Value added by manufacture (value of products less cost of materials)	56,484,541	14,268,227	21,723,114	3,314,494	6,912,349	10,266,357

In considering the relative importance of the several branches of this industry, "trimmed hats and hat frames" is the most important branch as measured by value of products, with "embroideries" ranking second in this respect, but first in the number of establishments. The branch "women's neckwear," with $92,643, ranks first in the average value of products per establishment, and "trimmed hats and hat frames," second, with $76,281.

Table 26 presents, for 1914, detailed statistics for the millinery and lace goods industry for the United States and for each state that can be shown without disclosing individual operations.

TABLE 26.—MILLINERY AND LACE GOODS—DETAIL STATEMENT FOR THE INDUSTRY, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.							WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.	EXPENSES.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.		Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of—		Male.	Female.	Male.	Female.		Officials.	Clerks, etc.
								Maximum month. / Minimum month.								
United States.	2,079	53,936	2,335	1,312	3,131	1,884	45,274	Mh 53,209 / Je 38,273	42,242	11,256	30,084	177	725	$53,100,601	$2,864,708	$4,483,994
California	42	507	51	16	22	13	405	Mh 530 / Je 293	433	127	304	2	.....	543,006	42,506	23,321
Connecticut	7	144	5	6	8	8	117	Je 149 / De 96	105	32	59	4	10	175,920	11,980	17,255
Georgia	5	187	1	10	8	3	165	Mh 240 / Jy 122	156	47	109	.....	.....	237,195	24,718	9,374
Illinois	102	4,003	68	119	320	173	3,323	Mh 4,294 / Je 2,379	3,353	837	2,443	9	64	2,805,993	285,408	425,851
Indiana	3	100	3	7	16	1	73	Mh 108 / De[1] 40	65	5	60	.....	.....	77,544	10,780	15,466
Iowa	5	43	4	2	1	3	33	Au 52 / My 21	38	4	23	.....	11	16,761	330	2,132
Kentucky	3	46	2	2	1	6	35	Je 37 / Fe[1] 33	36	5	31	.....	.....	16,840	3,272	2,691
Maryland	18	424	18	9	25	12	360	Mh 386 / Jy 322	368	43	318	.....	7	361,391	11,932	33,436
Massachusetts	69	2,393	68	91	118	90	2,026	Ap 2,584 / Je 1,669	2,122	469	1,607	11	35	2,116,672	177,236	214,046
Michigan	13	136	9	7	1	8	111	Mh 163 / Au 51	105	22	82	.....	1	72,318	10,182	5,513
Minnesota	9	325	4	9	1	3	308	Se 503 / De 133	329	33	296	.....	.....	529,761	11,339	1,819
Missouri	33	1,064	18	48	45	45	908	Fe 1,463 / Je 561	850	88	750	3	9	838,382	104,621	73,697
New Jersey	276	6,267	286	135	205	68	5,573	Fe 6,146 / Jy 4,873	5,812	1,444	4,198	15	155	7,889,950	336,846	250,748
New York	1,308	31,725	1,566	720	2,071	1,244	26,124	Mh 29,985 / Je 22,432	22,787	6,963	15,391	111	322	31,286,602	1,571,746	3,008,976
Ohio	30	1,116	35	39	73	58	911	Fe 1,299 / Je 534	897	221	672	.....	4	828,341	68,581	83,693
Pennsylvania	114	4,026	160	50	113	118	3,585	Mh 4,144 / Jy 3,052	3,491	702	2,711	12	66	3,675,470	91,817	179,991
Rhode Island	8	337	4	11	6	4	312	Mh 361 / Jy 271	279	10	257	.....	12	298,411	17,316	7,105
Tennessee	5	74	2	7	3	2	60	Fe 64 / De 54	62	16	28	7	11	204,803	12,600	3,804
Virginia	3	24	4	.....	.....	1	19	No 27 / Jy[1] 11	22	1	21	.....	.....	10,700	.....	180
Washington	3	45	5	1	.....	1	38	Fe 112 / De 10	23	3	20	.....	.....	16,180	2,000	468
Wisconsin	10	791	6	20	89	20	656	Fe 1,073 / No 282	734	160	558	3	13	955,408	64,295	118,231
All other states[2]	13	159	16	3	5	3	132	..... /	175	24	146	.....	5	144,953	5,203	6,197

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					
	Salaries and wages—Con.		Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage earners.	For contract work.	Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.[3]	Internal-combustion engines.[4]	Water wheels and motors.[3]	Electric (rented).	
United States.	$21,545,137	$1,919,756	$2,694,560	$156,172	$57,034,125	$641,796	$114,160,462	$56,484,541	12,736	4,832	626	715	6,563	1,320
California	230,084	4,370	44,246	3,218	536,200	8,164	1,127,538	583,174	142	75	.....	.....	67	57
Connecticut	42,830	4,445	1,165	1,115	165,029	2,774	285,278	117,475	68	.....	.....	.....	68	.....
Georgia	71,636	.....	8,204	1,085	208,478	3,257	379,086	167,351	74	25	10	.....	39	.....
Illinois	1,803,949	9,300	209,042	15,879	4,970,487	48,749	9,221,978	4,202,742	1,130	659	13	.....	458	481
Indiana	32,051	.....	3,000	457	76,468	452	154,940	78,020	29	.....	.....	.....	29	.....
Iowa	10,027	100	1,698	66	10,841	417	38,792	27,534	4	.....	.....	.....	4	.....
Kentucky	9,018	.....	3,720	141	5,957	165	48,448	42,326	15	.....	.....	.....	15	.....
Maryland	106,955	2,962	10,825	2,122	121,867	3,009	451,515	326,639	104	.....	.....	60	44	8
Massachusetts	939,998	26,608	98,749	14,725	2,851,275	34,909	4,918,886	2,032,702	451	78	12	.....	361	.....
Michigan	65,463	601	9,312	979	104,146	942	248,790	143,702	16	.....	.....	.....	16	.....
Minnesota	34,400	.....	8,471	5,099	639,976	7,620	944,666	297,070	116	100	.....	.....	16	100
Missouri	367,096	.....	56,357	3,589	1,052,455	12,038	2,162,822	1,098,329	241	125	.....	.....	116	5
New Jersey	2,558,816	270,885	127,494	31,774	3,807,642	106,189	10,485,723	6,571,892	1,709	524	159	40	986	58
New York	12,889,797	1,585,878	1,889,833	43,478	36,903,785	351,660	72,328,556	35,073,111	6,756	2,156	332	500	3,768	358
Ohio	433,194	150	38,513	5,091	989,311	15,610	1,917,919	912,998	409	85	27	50	247	70
Pennsylvania	1,451,919	6,932	149,138	4,839	2,851,963	27,818	6,272,803	3,393,112	934	625	66	.....	243	69
Rhode Island	83,433	25	3,764	1,681	302,410	3,595	486,202	180,197	52	.....	7	.....	45	.....
Tennessee	21,518	.....	4,836	1,515	61,909	664	131,943	69,370	4	.....	.....	.....	4	.....
Virginia	5,195	.....	1,380	635	16,300	79	28,397	12,018	1	.....	.....	.....	1	.....
Washington	14,232	.....	2,882	189	31,588	250	85,042	53,204	4	.....	.....	.....	4	.....
Wisconsin	321,507	3,754	16,883	17,580	1,186,696	11,128	2,154,658	956,834	311	300	.....	.....	11	108
All other states[2]	52,019	3,746	5,048	915	139,342	2,307	286,390	144,741	166	80	.....	65	21	6

[1] Same number reported for one or more other months.
[2] All other states embrace: Alabama, 1 establishment; Arkansas, 1; Connecticut, 7; District of Columbia, 2; Kansas, 2; Louisiana, 1; Maine, 1; New Hampshire, 1; Oregon, 2; Texas, 2
[3] Owned power only.
[4] Includes rented power, other than electric.

OILCLOTH AND LINOLEUM.

By JOHN G. HAWES.

SUMMARY AND ANALYSIS.

Scope of the industry.—The industry includes the manufacture of all kinds of floor oilcloth and linoleum, cork carpet, enameled oilcloth, table coverings, and carriage cloth. There were 18 establishments engaged primarily in the manufacture of oilcloth and linoleum for floor covering and 13 that specialized in the manufacture of enameled oilcloth. Statistics for the two classes of establishments are shown separately and in combination.

The linoleum and oilcloth intended for floor covering is made principally with a jute back, but compositions such as "linotile," "congoleum," and "feltoleum," with felt or paper back, and shade cloth were also made to some extent. This is the more important of the two industries as the establishments engaged in it gave employment to 78.4 per cent of the wage earners and their products formed 68.8 per cent of the total for the combined industry.

The enameled oilcloth is made with a cotton back. It includes that made with a grained surface on a duck backing, which is used as an upholstering material in the manufacture of carriages and automobiles, harness, etc., and comes in black or solid colors of all kinds and is of various qualities and grains. It also includes table oilcloth for household use, a cloth of light weight, in many colors and designs, usually printed, and oilcloth for shelf and wall covering. A small amount of stair oilcloth was also reported by establishments included in this group.

Summary for the industry.—Table 1 summarizes the statistics of the industry for each census from 1899 to 1914, inclusive.

Table 1

	NUMBER OR AMOUNT.				PER CENT OF INCREASE.[1]		
	1914	1909	1904	1899	1909–1914	1904–1909	1899–1904
OILCLOTH AND LINOLEUM.							
Number of establishments	31	31	27	27			
Persons engaged	6,234	5,557	4,112	3,409	12.2	35.1	20.6
Proprietors and firm members	7	11	12	26			
Salaried employees	576	345	217	153	67.0	59.0	41.8
Wage earners (average number)	5,651	5,201	3,883	3,230	8.7	33.9	20.2
Primary horsepower	22,272	16,125	10,112	7,561	38.1	59.5	33.7
Capital	$28,041,178	$19,634,138	$13,803,232	$8,879,102	42.8	42.2	55.5
Salaries and wages	4,149,632	3,474,628	2,304,987	1,922,636	19.4	50.7	19.9
Salaries	936,317	649,083	361,230	294,523	44.3	79.7	22.6
Wages	3,213,315	2,825,545	1,943,757	1,628,113	13.7	45.4	19.4
Paid for contract work		27,645	4,023				
Rent and taxes (including internal revenue)	114,805	74,449	[2] 49,309	[2] 38,004	54.2	50.8	29.9
Cost of materials	17,775,863	15,550,101	10,050,009	7,549,672	14.3	54.7	33.1
Value of products	25,598,361	23,339,022	14,792,246	11,402,620	9.7	57.8	29.7
Value added by manufacture (value of products less cost of materials)	7,822,498	7,788,921	4,742,237	3,852,948	0.4	64.2	23.1
OILCLOTH AND LINOLEUM, FLOOR.							
Number of establishments	18	19	16	18			
Persons engaged	4,798	4,468	3,548	2,844	7.4	25.9	24.8
Proprietors and firm members	3	6	10	21			
Salaried employees	367	237	183	105	54.8	29.5	74.3
Wage earners (average number)	4,428	4,225	3,355	2,718	4.8	25.9	23.4
Primary horsepower	18,782	14,158	8,703	6,421	32.7	62.7	35.5
Capital	$20,292,210	$14,721,702	$10,108,107	$7,176,198	37.8	45.6	40.9
Salaries and wages	3,204,608	2,750,367	2,020,089	1,521,174	16.5	36.2	32.8
Salaries	600,240	440,963	300,151	193,939	36.1	46.9	54.8
Wages	2,604,368	2,309,404	1,719,938	1,327,235	12.8	34.3	29.6
Paid for contract work		27,645					
Rent and taxes (including internal revenue)	79,801	53,517	[2] 33,708	[2] 31,978	49.1	58.8	5.4
Cost of materials	11,251,876	10,145,316	6,779,263	4,853,260	10.9	49.7	39.7
Value of products	17,602,336	15,813,331	10,388,237	7,807,105	11.3	52.2	33.1
Value added by manufacture (value of products less cost of materials)	6,350,460	5,668,015	3,608,974	2,953,845	12.0	57.1	22.2
OILCLOTH, ENAMELED.							
Number of establishments	13	12	11	9			
Persons engaged	1,436	1,089	564	565	31.9	93.1	—0.2
Proprietors and firm members	4	5	2	5			
Salaried employees	209	108	34	48	93.5	217.6	—29.2
Wage earners (average number)	1,223	976	528	512	25.3	84.9	3.1
Primary horsepower	3,490	1,967	1,409	1,140	77.4	39.6	23.6
Capital	$7,748,968	$4,912,436	$3,695,125	$1,702,904	57.7	32.9	117.0
Salaries and wages	945,024	724,261	284,898	401,462	30.5	154.2	—29.0
Salaries	336,077	208,120	61,079	100,584	61.5	240.7	—39.3
Wages	608,947	516,141	223,819	300,878	18.0	130.6	—25.6
Paid for contract work			4,023				
Rent and taxes (including internal revenue)	35,004	20,932	[2] 15,661	[2] 6,026	67.2	33.7	159.9
Cost of materials	6,523,987	5,404,785	3,270,746	2,696,412	20.7	65.2	21.3
Value of products	7,996,025	7,525,691	4,404,009	3,595,515	6.2	70.9	22.5
Value added by manufacture (value of products less cost of materials)	1,472,038	2,120,906	1,133,263	899,103	—30.6	87.2	26.0

[1] A minus sign (—) denotes decrease; percentages are omitted where base is less than 100.

[2] Exclusive of internal revenue.

The oilcloth and linoleum industry dates back to 1810, but did not assume any commercial importance until 1849, when there were reported 56 establishments, with a capital of $640,700, 650 wage earners, and a total value of products of $1,256,994. From 1849 to 1899 the number of establishments decreased by more than half, but the number of wage earners and value of products increased 396.9 per cent, and 807.1 per cent, respectively. During the 15 years from 1899 to 1914, there was an increase of 4 establishments only, and this increase was confined to that branch of the industry engaged in the manufacture of enameled oilcloth. During this period, the combined industry showed an increase of 75 per cent in wage earners and 124.5 per cent in value of products.

The relative growth of the two branches of the industry has been consistent, neither branch showing an unusual increase or decrease, due to the fact that the two classifications are so closely related.

Persons engaged in the industry.—Table 2 shows, for 1914 and 1909, the number of persons engaged in the combined industry, and in the two branches separately, distributed by sex, the average number of wage earners being distributed also by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Table 2

CLASS.	Census year.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Male.	Female.
Oilcloth and linoleum	1914	6,234	5,946	288
	1909	5,557	5,344	213
Proprietors and officials	1914	132	132	.....
	1909	111	110	1
Proprietors and firm members	1914	7	7	.....
	1909	11	10	1
Salaried officers of corporations	1914	52	52	.....
	1909	48	48	.....
Superintendents and managers	1914	73	73	.....
	1909	52	52	.....
Clerks and other subordinate salaried employees	1914	451	335	116
	1909	245	191	54
Wage earners (average number)	1914	5,651	5,479	172
	1909	5,201	5,043	158
16 years of age and over	1914	5,600	5,438	162
	1909	5,154	4,996	158
Under 16 years of age	1914	51	41	10
	1909	47	47	.....
Oilcloth and linoleum, floor	1914	4,798	4,645	153
	1909	4,468	4,331	137
Proprietors and officials	1914	85	85	.....
	1909	82	81	1
Proprietors and firm members	1914	3	3	.....
	1909	6	5	1
Salaried officers of corporations	1914	42	42	.....
	1909	38	38	.....
Superintendents and managers	1914	40	40	.....
	1909	38	38	.....
Clerks and other subordinate salaried employees	1914	285	212	73
	1909	161	135	26
Wage earners (average number)	1914	4,428	4,348	80
	1909	4,225	4,115	110
16 years of age and over	1914	4,403	4,323	80
	1909	4,193	4,083	110
Under 16 years of age	1914	25	25	.....
	1909	32	32	.....
Oilcloth, enameled	1914	1,436	1,301	135
	1909	1,089	1,013	76
Proprietors and officials	1914	47	47	.....
	1909	29	29	.....
Proprietors and firm members	1914	4	4	.....
	1909	5	5	.....
Salaried officers of corporations	1914	10	10	.....
	1909	10	10	.....
Superintendents and managers	1914	33	33	.....
	1909	14	14	.....
Clerks and other subordinate salaried employees	1914	166	123	43
	1909	84	56	28
Wage earners (average number)	1914	1,223	1,131	92
	1909	976	928	48
16 years of age and over	1914	1,197	1,115	82
	1909	961	913	48
Under 16 years of age	1914	26	16	10
	1909	15	15	.....

The total number of persons engaged in the industry as a whole in 1914 was 6,234, of whom 90.6 per cent were wage earners, 2.1 per cent were proprietors and officials, and 7.2 per cent were clerks and other subordinate salaried employees. Males predominated in all classes, but females represented an increased proportion of the clerks and other salaried employees in 1914 as compared with 1909. A very small proportion of the wage earners, in both years, was under 16 years of age.

Table 3 gives, for the several classes of persons engaged in the industry, the percentages of increase for the two five-year periods and the per cent distribution at the three censuses.

Table 3

CLASS.	PERSONS ENGAGED IN THE INDUSTRY. Number. 1914	1909	1904	Per cent distribution. 1914	1909	1904	Per cent of increase.[1] 1909–1914	1904–1909
Oilcloth and linoleum	6,234	5,557	4,112	100.0	100.0	100.0	12.2	35.1
Proprietors and firm members	7	11	12	0.1	0.2	0.3	.....	.....
Salaried employees	576	345	217	9.2	6.2	5.3	67.0	59.0
Wage earners (average)	5,651	5,201	3,883	90.6	93.6	94.4	8.7	33.9
Oilcloth and linoleum, floor	4,798	4,468	3,548	100.0	100.0	100.0	7.4	25.9
Proprietors and firm members	3	6	10	0.1	0.1	0.3	.....	.....
Salaried employees	367	237	183	7.6	5.3	5.2	54.9	29.5
Wage earners (average)	4,428	4,225	3,355	92.3	94.6	94.6	4.8	25.9
Oilcloth, enameled	1,436	1,089	564	100.0	100.0	100.0	31.9	93.1
Proprietors and firm members	4	5	2	0.3	0.5	0.4	.....	.....
Salaried employees	209	108	34	14.6	9.9	6.0	93.5	217.6
Wage earners (average)	1,223	976	528	85.2	89.6	93.6	25.3	84.8

[1] Percentages are omitted where base is less than 100.

Salaried employees represent an increased proportion of the total persons engaged in the industry at the successive census periods shown in the table, while wage earners form a slightly decreased proportion. Each of these classes, however, increased substantially in number during the decade.

Wage earners employed, by months.—The following table gives, for the industry as a whole and for the two branches separately, the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

Table 4

MONTH.	WAGE EARNERS IN THE INDUSTRY.					
	Number.[1]			Per cent of maximum.		
	1914	1909	1904	1914	1909	1904
OILCLOTH AND LINOLEUM.						
January	5,870	5,083	3,857	100.0	93.5	97.6
February	5,859	5,110	3,907	99.8	94.0	98.8
March	5,859	5,100	3,906	99.8	93.8	98.8
April	5,774	5,057	3,932	98.4	93.0	99.5
May	5,727	5,133	3,859	97.6	94.4	97.6
June	5,736	5,158	3,902	97.7	94.9	98.7
July	5,423	5,169	3,894	92.4	95.1	98.5
August	5,449	5,221	3,953	92.8	96.1	100.0
September	5,525	5,282	3,914	94.1	97.2	99.0
October	5,619	5,351	3,890	95.7	98.5	98.4
November	5,446	5,321	3,780	92.8	97.9	95.6
December	5,525	5,435	3,802	94.1	100.0	96.2
OILCLOTH AND LINOLEUM, FLOOR.						
January	4,572	4,101	3,355	100.0	92.9	97.4
February	4,556	4,141	3,395	99.6	93.8	98.5
March	4,564	4,113	3,381	99.8	93.2	98.1
April	4,499	4,092	3,403	98.4	92.7	98.8
May	4,503	4,200	3,324	98.5	95.2	96.5
June	4,528	4,209	3,340	99.0	95.4	97.0
July	4,267	4,211	3,384	93.3	95.4	98.2
August	4,203	4,266	3,445	93.2	96.6	100.0
September	4,359	4,307	3,408	95.3	97.6	98.9
October	4,431	4,354	3,379	96.9	98.6	98.1
November	4,262	4,297	3,231	93.2	97.3	93.8
December	4,332	4,414	3,215	94.8	100.0	93.3
OILCLOTH, ENAMELED.						
January	1,298	982	502	99.6	95.9	85.5
February	1,303	969	512	100.0	94.6	87.2
March	1,295	987	525	99.4	96.4	89.4
April	1,275	965	529	97.9	94.2	90.1
May	1,224	933	535	93.9	91.1	91.1
June	1,208	949	562	92.7	92.7	95.7
July	1,156	958	510	88.7	93.6	86.9
August	1,186	955	508	91.0	93.3	86.5
September	1,166	975	506	89.5	95.2	86.2
October	1,188	997	511	91.2	97.4	87.1
November	1,184	1,024	549	90.9	100.0	93.5
December	1,193	1,021	587	91.6	99.7	100.0

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904, the average number employed during the month.

The industry shows comparative regularity in monthly employment, the minimum number of wage earners employed in 1914 forming 92.4 per cent of the maximum, as compared with 93 per cent and 95.6 per cent in 1909 and 1904, respectively.

Prevailing hours of labor.—In Table 5 the average number of wage earners reported, for 1914 and 1909 for the industry as a whole, and for the two branches separately, has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment was classified as a total, even though a few employees worked a greater or smaller number of hours.

The figures in the following table indicate a shortening of the working day. In 1914, 53.3 per cent of the total wage earners for the combined industry were employed in establishments operating between 54 and 60 hours per week. In 1909, almost as great a proportion, 52.4 per cent of the wage earners, worked in establishments where the prevailing hours were 60 per week. The combined total of wage earners employed in establishments where shorter hours prevailed—from 48 to 54 per week—increased from 7.7 per cent in 1909 to 22.9 per cent in 1914.

Table 5

PREVAILING HOURS OF LABOR PER WEEK.	TOTAL.		Oilcloth and linoleum, floor.	Oilcloth, enameled.
	1914	1909	1914	1914
Total	5,651	5,201	4,428	1,223
48 and under	6	14	6	.....
Between 48 and 54	524	16	439	85
54	767	370	441	326
Between 54 and 60	3,012	2,074	2,273	739
60	1,342	2,727	1,269	73

Character of ownership.—Table 6 presents statistics concerning the character of ownership, or legal organization, of establishments in the oilcloth and linoleum industry for 1914 and 1909.

Table 6

CHARACTER OF OWNERSHIP.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.
Total	1914	31	5,651	$25,598,361
	1909	31	5,201	23,339,022
Individual[1]	1914	4	160	1,111,347
	1909	5	246	906,044
Corporation	1914	27	5,491	24,487,014
	1909	26	4,955	22,432,978
Per cent of total:				
Individual[1]	1914	12.9	2.8	4.3
	1909	16.1	4.7	3.9
Corporation	1914	87.1	97.2	95.7
	1909	83.9	95.3	96.1

[1] Includes two establishments in 1914 and three in 1909 under "other" form of ownership, to avoid disclosure of individual operations.

Of the 31 establishments reported in 1914 and 1909, corporations controlled 87.1 per cent in the former and 83.9 per cent in the latter year. Over 95 per cent of the total number of wage earners and value of products were reported, for both years, by establishments under the corporate form of ownership.

Classification according to size.—The tendency of the industry to become concentrated in large establishments is indicated in Table 7.

As measured by value of products, the average size of establishments in this industry is larger than in most other industries. The average per establishment increased from $422,319 in 1904 to $752,872 in 1909 and to $825,753 in 1914. In 1914, 81 per cent

of the total number of wage earners and 71.8 per cent of the total value of products were reported by establishments whose products were valued at $1,000,000 and over.

Table 7

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.
Total	1914	31	5,651	$25,598,361
	1909	31	5,201	23,339,022
$20,000 to $100,000 [1]	1914	7	92	274,700
	1909	4	49	255,940
$100,000 to $1,000,000	1914	15	983	6,930,521
	1909	19	1,368	7,415,329
$1,000,000 and over	1914	9	4,576	18,393,140
	1909	8	3,784	15,667,753
Per cent of total:				
$20,000 to $100,000 [1]	1914	22.6	1.6	1.1
	1909	12.9	0.9	1.1
$100,000 to $1,000,000	1914	48.4	17.4	27.1
	1909	61.3	26.3	31.8
$1,000,000 and over	1914	29.0	81.0	71.8
	1909	25.8	72.8	67.1

[1] Includes the group having products valued at "$5,000 to $20,000."

Table 8 shows the size of establishments in the combined industry for 1914 and 1909, and in the two branches of the industry separately for 1914, as measured by the number of wage earners employed.

Table 8

ESTABLISHMENTS EMPLOYING—	TOTAL.				OILCLOTH AND LINOLEUM, FLOOR.		OILCLOTH, ENAMELED.	
	1914		1909		1914		1914	
	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
Total	31	5,651	31	5,201	18	4,428	13	1,223
1 to 5 wage earners	1	4	.....	.....	.....	.....	1	4
6 to 20 wage earners	6	69	7	87	6	69	.....	.....
21 to 50 wage earners	5	141	3	113	2	64	3	77
51 to 100 wage earners	7	520	10	766	2	169	5	351
101 to 250 wage earners	4	561	5	855	1	120	3	441
251 to 500 wage earners	4	1,501	3	1,234	3	1,151	1	350
501 to 1,000 wage earners	4	2,855	3	2,146	4	2,855	.....	.....
Over 1,000 wage earners	.....	.....	.....	.....	.....	.....	.....	.....

The largest number of wage earners for the combined industry and for floor oilcloth and linoleum are in establishments employing from 501 to 1,000 wage earners, while in the manufacture of enameled oilcloth the largest number worked in establishments employing from 101 to 250 wage earners.

Engines and power.—Table 9 shows, for the combined industry and its two branches separately, in 1914, 1909, and 1904, the number and horsepower of engines and motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

In 1904 and 1909, in the combined industry, owned power formed over 90 per cent of the total power used, while in 1914, owned power dropped to 71.7 per cent of the total. This decrease was caused by the increased use of motors run by rented power. The increase of the total primary horsepower from 1909 to 1914 is due almost entirely to the increase in the number of electric motors used. The relative proportions are practically the same in the two branches of the industry as in the combined industry.

Table 9

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.		
	1914	1909	1904	1914	1909	1904
OILCLOTH AND LINOLEUM.						
Primary power, total	599	223	156	22,272	16,125	10,112
Owned	151	175	148	15,966	15,048	9,934
Steam engines and turbines [1]	148	174	146	15,486	15,046	9,937
Internal-combustion engines	3	1	2	480	2	47
Rented	448	48	8	6,306	1,077	128
Electric	448	48	8	6,306	1,002	93
Other	.....	.....	.....	.....	75	35
Electric	1,022	336	125	14,965	4,540	1,275
Rented	448	48	8	6,306	1,002	93
Generated by establishments reporting	574	288	117	8,659	3,538	1,182
OILCLOTH AND LINOLEUM, FLOOR.						
Primary power, total	438	175	132	18,782	14,158	8,703
Owned	124	142	124	13,521	13,333	8,610
Steam engines and turbines [1]	124	141	123	13,521	13,331	8,608
Internal-combustion engines	.....	1	1	.....	2	2
Rented	314	33	8	5,261	825	93
Electric	314	33	8	5,261	825	93
Other	.....	.....	.....	.....	.....	.....
Electric	707	211	78	12,272	3,541	995
Rented	314	33	8	5,261	825	93
Generated by establishments reporting	393	178	70	7,011	2,716	902
OILCLOTH, ENAMELED.						
Primary power, total	161	48	24	3,490	1,967	1,409
Owned	27	33	24	2,445	1,715	1,374
Steam engines and turbines [1]	24	33	23	1,965	1,715	1,329
Internal-combustion engines	3	.....	1	480	.....	45
Rented	134	15	.....	1,045	252	35
Electric	134	15	.....	1,045	177	.....
Other	.....	.....	.....	.....	75	35
Electric	315	125	47	2,693	999	280
Rented	134	15	.....	1,045	177	.....
Generated by establishments reporting	181	110	47	1,648	822	280

[1] Figures for horsepower include for 1904 the amounts reported under the head of "other" owned power.

Fuel.—Table 10 shows, for 1914 and 1909, the quantity of each kind of fuel used, for which data were obtained, for the industry as a whole, and for the two branches separately.

Table 10

KIND OF FUEL.	TOTAL.		OILCLOTH AND LINOLEUM, FLOOR.		OILCLOTH, ENAMELED.	
	1914	1909	1914	1909	1914	1909
Anthracite coal (tons, 2,240 lbs.)	43,673	39,139	30,105	31,195	13,568	7,944
Bituminous coal (tons, 2,000 lbs.)	176,825	150,019	145,316	121,134	31,509	28,885
Coke (tons, 2,000 lbs.)	625	2,218	478	1,958	147	260
Oil, including gasoline (barrels)	828	8,215	50	8,215	778	.....
Gas (1,000 cubic feet)	1,215	.....	413	.....	802	.....

SPECIAL STATISTICS RELATING TO PRODUCTS.

Table 11 gives the kind, quantity, and value of the various products of the industry for 1914, 1909, and 1904. The special statistics in 1909 included artificial leather, but in 1914 that product was classified as "upholstering materials," under which designation statistics appear in the general census reports.

Table 11	1914	1909	1904	PER CENT OF INCREASE.[1] 1909–1914	1904–1909
Products, total value	$25,598,361	$23,339,022	$14,792,246	9.7	57.8
Oilcloth (made on cotton back):					
Enameled—					
Square yards	18,357,097	17,338,440	11,574,986	5.9	49.8
Value	$2,495,255	$2,365,146	$1,542,467	10.2	46.9
Table, wall, shelf, and stair—					
Square yards	59,358,872	61,168,777	38,026,083	−3.0	60.9
Value	$6,025,348	$5,639,206	$3,540,181	6.8	59.3
Oilcloth and linoleum (made on jute back):					
Floor oilcloth—					
Square yards	7,536,379	18,354,851	21,456,615	−58.9	−14.5
Value	$1,483,731	$3,776,060	$3,565,689	−60.7	5.9
Linoleum, including cork carpet—					
Square yards	33,306,669	26,215,979	14,765,284	27.0	77.6
Value	$10,043,426	$7,850,437	$4,223,992	27.9	85.9
Inlaid linoleum—					
Square yards	8,479,202	4,460,275	2,126,178	90.1	109.8
Value	$4,725,837	$2,994,491	$1,104,808	57.8	171.0
All other products, value	$824,754	$813,082	$815,109	1.4	−0.2

[1] A minus sign (−) denotes decrease.

The above table shows a segregation of oilcloth made on cotton back and oilcloth and linoleum made on jute back. Oilcloth used on tables, walls, shelves, and stairs is the leading cotton-backed product, its value representing 23.5 per cent of the total value of products reported for the industry as a whole. Although this variety of oilcloth decreased 3 per cent in quantity, it shows an increase of 6.8 per cent in value from 1909 to 1914.

The production of floor oilcloth decreased 58.9 per cent in quantity and 60.7 per cent in value, due to the substitution of linoleum for oilcloth in recent years. Although these are the only decreases reported in value and quantity from 1909 to 1914, percentages of increase, in all items, are very much smaller from 1909 to 1914 than from 1904 to 1909, indicating that the volume of business in this industry decreased in the last half of the decade 1904–1914.

Of the product made on jute back, linoleum, including cork carpet, is the most important. The value of this product represented nearly two-thirds (61.8 per cent) of all jute-backed products made in 1914, and more than one-third (39.2 per cent) of products reported for the oilcloth and linoleum industry. Inlaid linoleum shows the largest percentage of gain of any of the products of the industry during the five-year period, 90.1 per cent in output and 57.8 per cent in value.

Of the 31 establishments engaged in this industry in 1914, 15 were in New Jersey and Pennsylvania, and 16 in nine other states as follows: California, 1; Indiana, 2; Illinois, 1; Maine, 2; Massachusetts, 2; Michigan, 1; Missouri, 1; New York, 3; and Ohio, 3. Statistics are shown separately for New Jersey and Pennsylvania in Table 13, but could not be shown for the nine other states without disclosing individual operations. Of the 5,651 wage earners employed in the industry, New Jersey employs 2,190, or 38.8 per cent, and Pennsylvania, 1,303, or 23.1 per cent, and of the total value of products for the industry as a whole, New Jersey reports 44.5 per cent and Pennsylvania 28 per cent. These two states report the manufacture of 34.8 per cent of the total square yards of oilcloth made on cotton back, 88.1 per cent of the total square yards of floor oilcloth made on jute backing, and 92 per cent of the total square yards of linoleum, including inlaid linoleum.

Exports and imports.—Table 12 gives the amount and value of the imports and the value of the exports of oilcloth and linoleum from 1898 to 1915, inclusive, as compiled from the reports of the Bureau of Foreign and Domestic Commerce, Department of Commerce.

Table 12 YEAR ENDING JUNE 30—	IMPORTS. Square yards.	IMPORTS. Value.	Exports (value).
1915	2,648,148	$1,199,662	$634,386
1914	4,064,374	1,829,596	727,087
1913	4,202,786	1,840,878	807,576
1912	4,450,400	1,917,298	710,515
1911	5,321,964	2,102,612	493,902
1910	4,848,615	1,834,640	482,086
1909	5,306,329	1,894,810	359,764
1908	6,114,568	2,102,313	359,801
1907	7,109,067	2,313,772	353,808
1906	5,470,460	1,744,539	286,577
1905	3,508,855	1,220,372	269,929
1904	3,381,534	1,201,070	231,267
1903	3,358,655	1,105,894	221,417
1902	1,824,579	681,464	189,291
1901	1,306,222	532,255	172,635
1900	832,405	407,008	141,917
1899	416,658	216,210	132,532
1898	(1)	(1)	118,641

[1] Not reported separately prior to 1899.

Imports reported in Table 12 cover only floor oilcloth and linoleum. A clear distinction has not been made between cotton cloth and oilcloth made on cotton backing, therefore, only floor oilcloth is reported. The exports, however, include the statistics for all classes of oilcloth. Imports steadily increased from 1898 to 1907, but from 1908 to 1915, except in the year 1911, there was a continuous decrease.

The value of exports increased each year from 1898 to 1913, with the single exception of a very small decrease in 1909. There was a pronounced decrease, however, from 1913 to 1915.

By adding the floor oilcloth and linoleum imported to that produced, and subtracting from that total the exports, it will be seen that there were available for consumption in the United States in 1914, 42,412,451 square yards, valued at $10,724,085.

DETAIL STATE TABLE.

TABLE 13.—DETAIL STATEMENT FOR THE OILCLOTH AND LINOLEUM INDUSTRY, BY STATES: 1914.

INDUSTRY AND STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.	EXPENSES.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of— Maximum month.	Number, 15th day of— Minimum month.		Male.	Female	Male	Female		Officials.	Clerks, etc.
OILCLOTH AND LINOLEUM.																	
United States	31	6,234	7	125	335	116	5,651	Ja 5,870	Jy 5,423	5,568	5,358	159	41	10	$28,041,178	$412,296	$524,021
New Jersey	10	2,420	5	46	131	48	2,190	Fe 2,302	De 2,093	2,101	2,051	20	30	.....	10,982,932	170,813	202,212
Pennsylvania	5	1,980	.....	22	121	34	1,803	Oc 1,927	Jy 1,621	1,864	1,852	5	7	.....	9,446,876	87,444	190,181
All other states	16	1,834	2	57	83	34	1,658	.....	.....	1,603	1,455	134	4	10	7,611,370	154,039	131,628
OILCLOTH AND LINOLEUM, FLOOR.																	
United States	18	4,798	3	82	212	73	4,428	Ja 4,572	No 4,262	4,366	4,262	79	25	.....	20,292,210	259,119	341,121
New Jersey	7	2,020	1	39	86	36	1,858	Ja 1,949	De 1,775	1,783	1,745	20	18	.....	8,665,983	137,240	141,778
Pennsylvania	5	1,980	.....	22	121	34	1,803	Oc 1,927	Jy 1,621	1,864	1,852	5	7	.....	9,446,876	87,444	190,181
All other states[1]	6	798	2	21	5	3	767	.....	.....	719	665	54	.....	.....	2,179,351	34,435	9,162
OILCLOTH, ENAMELED.																	
United States	13	1,436	4	43	123	43	1,223	Fe 1,303	Jy 1,156	1,202	1,096	80	16	10	7,748,968	153,177	182,900
New Jersey	3	400	4	7	45	12	332	Mh[2] 354	Se 312	318	306	.....	12	.....	2,316,949	33,573	60,434
All other states[3]	10	1,036	.....	36	78	31	891	.....	.....	884	790	80	4	10	5,432,019	119,604	122,466

INDUSTRY AND STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					
	Salaries and wages—Contd.		Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage earners.	For contract work.	Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.[4]	Internal-combustion engines.[5]	Water wheels and motors.[4]	Electric (rented).	
OILCLOTH AND LINOLEUM.														
United States	$3,213,315	.....	$6,339	$108,466	$17,123,934	$651,929	$25,598,361	$7,822,498	22,272	15,486	480	.....	6,306	8,659
New Jersey	1,286,672	.....	.....	55,041	7,384,698	275,095	11,384,311	3,724,518	8,223	7,230	.....	.....	993	6,613
Pennsylvania	1,072,309	.....	464	12,740	4,441,328	205,575	7,165,362	2,518,459	9,554	5,336	.....	.....	4,218	1,428
All other states	854,334	.....	5,875	40,685	5,297,908	171,259	7,048,688	1,579,521	4,495	2,920	480	.....	1,095	618
OILCLOTH AND LINOLEUM, FLOOR.														
United States	2,604,368	.....	5,052	74,749	10,722,569	529,307	17,602,336	6,350,460	18,782	13,521	.....	.....	5,261	7,011
New Jersey	1,085,250	.....	.....	47,096	5,188,941	244,535	8,653,161	3,219,685	7,438	6,445	.....	.....	993	5,508
Pennsylvania	1,072,309	.....	464	12,740	4,441,328	205,575	7,165,362	2,518,459	9,554	5,336	.....	.....	4,218	1,428
All other states[1]	446,809	.....	4,588	14,913	1,092,300	79,197	1,783,813	612,316	1,790	1,740	.....	.....	50	75
OILCLOTH, ENAMELED.														
United States	608,947	.....	1,287	33,717	6,401,365	122,622	7,996,025	1,472,038	3,490	1,965	480	.....	1,045	1,648
New Jersey	201,422	.....	.....	7,945	2,195,757	30,560	2,731,150	504,833	785	785	.....	.....	.....	1,105
All other states[3]	407,525	.....	1,287	25,772	4,205,608	92,062	5,264,875	967,205	2,705	1,180	480	.....	1,045	543

[1] All other states embrace: Illinois, 1 establishment; Indiana, 1; Maine, 1; Michigan, 1; and New York, 2.
[2] Same number reported for one or more other months.
[3] All other states embrace: California, 1 establishment; Illinois, 1; Maine, 1; Massachusetts, 2; Missouri, 1; New York, 1; and Ohio, 3.
[4] Owned power only.
[5] Includes rented power, other than electric.

IRON AND STEEL.

THE BLAST FURNACE, STEEL WORKS AND ROLLING MILL, WIRE, AND TIN-PLATE AND TERNEPLATE INDUSTRIES.

By STORY B. LADD.

PART I.—THE GROUP AS A WHOLE.

Relationship of the industries.—Four classes of manufactured products:—(1) pig iron, (2) steel and hot rolled iron and steel, (3) wire, and (4) tin plate and terneplate—are more or less intimately related, and frequently the manufacture of two or more are conducted in one and the same plant. Each, however, is treated by the Census Bureau as a separate industry, and in order to bring out the relative importance of the different industries and to maintain the comparability of the statistics with respect to prior censuses, separate reports were secured for the blast furnaces, and for the tin and terne dipping business, when the same were associated with steel plants or with rolling mills.

The segregation of the statistics for steel furnaces when operated in conjunction with a rolling mill, or for the wire department of an establishment that rolls the rods, presents many difficulties, and no attempt was made to secure separate reports therefor. The bulk of the pig-iron product of the country, two-thirds or more, is converted into steel and the steel fabricated into rolled forms in the same industrial plant. In these cases separate reports were secured for the blast-furnace department, on the one hand, and the steel-works and rolling-mill department on the other. A transfer value is assigned to the pig iron delivered to the steel works, the same figuring as income in the blast-furnace report, and as a material expense in the report for the steel department, each department counting as an establishment. In the tin-plate and terneplate industry practically all of the production—98 per cent—is the output of plants that roll the black plates and dip them, and the general statistics of manufacture reported for the tin-plate and terneplate industry are based largely upon estimates. This manufacture has been retained as a separate industry chiefly because of its rapid development within the last three decades. The statistics for the black-plate rolling mills, exclusive of the dipping departments, are included with the general statistics for steel works and rolling mills, although in the special report for the tin-plate and terneplate industry separate statistics for the black-plate mills are presented. The black plates transferred to the dipping departments are assigned a value which enters into the products of the rolling-mill industry and into the material expense of the tin-plate industry.

A large portion of the wire produced in the United States—two-thirds of the steel wire—is drawn in the wire departments of iron and steel rolling mills, and in the statistics for steel works and rolling mills the entire value of the wire and wire products made by such mills, including the enhancement in value of the rolled rods when drawn into wire, enters into the value of the products for the industry. The statistics regarding the wire industry as a whole are presented in Part V of this report.

Duplication in value of products and cost of materials.—The aggregation of the statistics of materials and products for the several industries, as reported, give totals having no particular significance because of the large amount of duplication due to the use of products of one establishment as materials for another establishment in the group. There is also considerable duplication within the single industry designated as "steel works and rolling mills." The following table shows approximately, for 1914 and 1909, the value of the products consumed by establishments within the group.

Table 1 BLAST-FURNACE, STEEL-WORKS AND ROLLING-MILL, WIRE, AND TIN-PLATE INDUSTRIES: 1914 and 1909.

	Total.	Blast furnaces.	Steel works and rolling mills.	Wire mills using purchased rods.	Tin-plate and terne plate dipping establishments.
Number of establishments:					
1914	672	160	427	54	31
1909	741	208	446	56	31
Gross value of products:					
1914	$1,386,502,522	$317,653,983	$918,664,565	$81,841,012	$68,342,962
1909	1,509,607,980	391,429,283	985,722,534	84,486,518	47,969,645
Products consumed by establishments within this industrial group:					
1914	449,993,647	248,630,958	201,362,689	.....	.....
1909	510,538,179	297,471,122	213,067,057	.....	.....
Products not used by establishments within this industrial group:					
1914	936,508,875	69,023,025	717,301,876	81,841,012	68,342,962
1909	999,069,801	93,958,161	772,655,477	84,486,518	47,969,645

The resulting balance, as a whole, and for each of the several industries, is the approximate value of the products which were produced for sale to outside establishments. For example, of the blast-furnace

products in 1914, valued at $317,653,983, products to the value of $248,630,958 were consumed in affiliated steel plants. The total value of products in 1914 for the group as a whole, exclusive of those consumed by establishments within the group, was $936,508,875. This amount is $62,560,926, or 6.3 per cent less than the corresponding value for 1909. This resultant is not to be confused with the value added to materials by manufacture—that is, the value of products less the cost of all materials—which for the combined industries amounted to $416,765,715 in 1914, a decrease as compared with 1909 of but $12,271,155, or 2.9 per cent.

The relative importance of the constituent industries is best indicated by the number of wage earners employed or by the value added by manufacture, rather than by the value of products. Such statistics are presented in Table 2. The table shows the per cent distribution of the number of wage earners and the value added by manufacture.

Table 2 — BLAST-FURNACE, STEEL-WORKS AND ROLLING-MILL, WIRE, AND TIN-PLATE INDUSTRIES: 1914 and 1909.

	Total.	Steel works and rolling mills.	Blast furnaces.	Wire mills using purchased rods.	Tin-plate and terne-plate dipping establishments.
Wage earners, average number:					
1914	300,910	248,716	29,356	17,600	5,238
1909	301,941	240,076	38,429	18,084	5,352
Per cent distribution—					
1914	100.0	82.7	9.8	5.8	1.7
1909	100.0	79.5	12.7	6.0	1.8
Value added to materials by manufacture:					
1914	$416,765,715	$327,838,873	$53,073,923	$25,416,518	$10,436,401
1909	429,036,870	328,221,678	70,791,394	23,943,587	6,080,211
Per cent distribution—					
1914	100.0	78.7	12.7	6.1	2.5
1909	100.0	76.5	16.5	5.6	1.4

The 672 establishments constituting the group in 1914 includes 64 blast furnace establishments operated in conjunction with steel works and 28 tin and terne plate establishments operated as departments of rolling mills, making 92 establishments which are industrially parts of establishments separately reported as steel works or rolling mills. Hence there are 580 industrial plants represented in the group. The 741 establishments for 1909 includes 57 blast-furnace establishments operated in conjunction with steel works and 27 tin and terne plate establishments operated as departments of rolling mills, and the number of plants represented is 657.

Number of owners, establishments, and value of products.—The 672 establishments constituting the group represented 443 owners. Of the total number 374 operated 1 establishment only, constituting 55.7 per cent of the total number of establishments and their products, valued at $331,016,773, formed 23.9 per cent of the total value of products. These independently operated establishments comprised 86 blast-furnace establishments, a little more than one-half of the total number; 249 steel works and rolling mills, nearly three-fifths of the total number; approximately two-thirds of the wire establishments, which, however, do not embrace the wire departments of rolling mills; and 4 of the tin or terne dipping establishments. Table 3 classifies the owners by number of establishments operated; those operating 1 establishment; 2 to 4, inclusive; and 5 or more.

Table 3 — BLAST-FURNACE, STEEL-WORKS AND ROLLING-MILL, WIRE, AND TIN-PLATE INDUSTRIES: 1914.

CLASS.	Number of owners.	Number of establishments.	Value of products.
Total	443	672	$1,386,502,522
Blast furnaces	116	160	317,653,983
Steel works and rolling mills	310	427	918,664,565
Wire	43	54	81,841,012
Tin plate and terneplate	18	31	68,342,962
Owners operating:			
1 establishment only	374	[1] 374	331,016,773
2 to 4 establishments	56	[2] 129	383,709,351
5 or more establishments	13	[3] 169	671,776,398
Per cent distribution:			
1 establishment only	84.4	55.7	23.9
2 to 4 establishments	12.7	19.2	27.7
5 or more establishments	2.9	25.1	48.4

[1] Blast furnaces, 86; steel works and rolling mills, 249; wire, 35; tin plate and terneplate, 4.
[2] Blast furnaces, 36; steel works and rolling mills, 73; wire, 9; tin plate and terneplate, 11.
[3] Blast furnaces, 38; steel works and rolling mills, 105; wire, 10; tin plate and terneplate, 16.

Unit of measure.—In all statements of tonnage relating to blast furnaces and steel works and rolling mills the gross or long ton (2,240 pounds) is used except where otherwise stated. The net or short ton (2,000 pounds) is used in expressing the quantities for the wire industry.

PART II.—BLAST FURNACES AND STEEL WORKS AND ROLLING MILLS COMBINED.

In the reports for prior censuses a presentation has been made of the combined statistics for blast furnaces and steel works and rolling mills. Approximately three-fourths of the pig-iron output is consumed by the steel works and rolling mills, and a large proportion is produced in immediate conjunction with steel works, the smelting of ore, the conversion of iron into steel, and the rolling of steel, being, in the main, a progressive industrial operation. The aggregation of the expense for materials and for the value of products as reported for the separate classified industries has little significance, on account of the duplication involved; but the statistics pertaining to persons engaged in the industry, salary, and wage expense, capital, power, and the value added to materials by manufacture can properly be combined. These statistics for the two industries are presented in Table 4 for the censuses 1899 to 1914, inclusive.

Table 4

	BLAST FURNACES AND STEEL WORKS AND ROLLING MILLS COMBINED.				PER CENT OF INCREASE.[1]		
	1914	1909	1904	1899	1909–1914	1904–1909	1899–1904
Number of establishments	587	654	605	668	−10.2	8.1	−9.4
Persons engaged in the industry	307,356	303,823	259,291	231,871	1.2	17.2	11.8
Proprietors and firm members	67	95	90	170	−29.5	5.6	−47.1
Salaried employees	29,217	25,223	16,561	9,211	15.8	52.3	79.8
Wage earners (average number)	278,072	278,505	242,640	222,490	−0.2	14.8	9.1
Primary horsepower	3,928,826	3,274,400	2,422,577	1,598,073	20.0	35.2	51.6
Capital	$1,720,652,188	$1,492,315,770	$936,327,839	$573,391,663	15.3	59.4	63.3
Services	$254,553,528	$220,523,364	$162,177,898	$132,559,764	15.4	36.0	22.3
Salaries	$43,630,504	$32,716,076	$20,751,392	$11,737,488	33.4	57.7	76.8
Wages	$210,923,024	$187,807,288	$141,426,506	$120,820,276	12.3	32.8	17.1
Value added by manufacture (value of products less cost of materials)	$380,912,796	$399,013,072	$285,641,383	$281,570,341	−4.5	39.7	1.4
Pig iron:							
Production (tons, 2,240 pounds)	23,269,731	25,651,798	16,623,625	14,447,791	−9.3	54.3	15.1
Consumption by steel works and rolling mills (tons)	17,429,657	19,076,889	12,191,228	10,410,281	−8.6	56.5	17.1
Finished rolled products and forgings (tons)	18,482,182	19,276,237	12,759,993	10,398,796	−4.1	51.1	22.7

[1] A minus sign (−) denotes decrease.

The table shows in the decreases of tonnage the effect of the depression of 1914 on the iron and steel industry. The tonnage of finished rolled products and forgings was equal, in 1914, to 79.4 per cent of the pig-iron tonnage; in 1909 to 75.1 per cent; in 1904 to 76.8 per cent, and in 1899 to 72 per cent.

Table 5 shows for blast furnaces and steel works and rolling mills combined, by states, the average number of wage earners and the value added to materials by manufacture in 1914, together with the percentages of increase in these items for the five-year periods intervening between the censuses of 1899 and 1914. In determining state rank all states are considered. Certain states for which data can not be shown separately without disclosing the operations of individual establishments, ranked higher than some of those named in the table, notably Indiana, which ranks fifth as to wage earners, Alabama which ranks sixth, West Virginia seventh, New Jersey eighth, and Massachusetts ninth.

Table 5

STATE.	BLAST FURNACES AND STEEL WORKS AND ROLLING MILLS COMBINED: 1914.									PER CENT OF INCREASE.[1]					
	Number of establishments.	Wage earners.		Rank.		Value added by manufacture.		Rank.		Wage earners (average number).			Value added by manufacture.		
		Average number.	Per cent of total.	1914	1909	Amount.	Per cent of total.	1914	1909	1909–1914	1904–1909	1899–1904	1909–1914	1904–1909	1899–1904
United States	587	278,072	100.0	.....	.....	$380,912,796	100.0	.....	.....	−0.2	14.8	9.1	−4.5	39.7	1.4
Pennsylvania	230	143,473	51.6	1	1	183,028,918	48.1	1	1	1.4	13.4	12.5	−7.5	34.6	−2.8
Ohio	103	52,183	18.8	2	2	77,577,744	20.4	2	2	13.7	38.2	−1.4	5.1	75.0	−11.4
Illinois	30	16,858	6.1	3	3	29,124,438	7.6	3	3	−16.0	9.4	10.3	−22.9	27.1	59.9
New York	32	12,620	4.5	4	5	16,059,630	4.2	5	4	1.9	36.4	67.7	−17.0	89.2	65.4
Wisconsin	17	2,511	0.9	10	10	2,995,041	0.8	10	10	−12.9	20.2	24.8	−19.1	(2)	5.9
Michigan	21	1,709	0.6	16	16	2,418,894	0.6	12	13	−22.3	1.9	9.4	−9.5	9.0	15.0
Delaware	5	818	0.3	20	20	736,900	0.2	20	22	15.2	−32.7	−29.1	12.3	−0.2	−56.9
All other states	149	47,900	17.2	.....	.....	68,971,231	18.1	.....	.....	.....	.....	.....	.....	.....	.....

[1] A minus sign (−) denotes decrease.

[2] Less than one-tenth of 1 per cent.

PART III.—BLAST FURNACES.

GENERAL STATISTICS.

Description of the industry.—The term "pig iron," unqualified, embraces all grades of the iron product of the blast furnace, including spiegeleisen, ferromanganese, ferrosilicon, and other ferroalloys, regardless of the disposition made of the product—whether cast into pigs, into direct castings, or passed on in the molten state to subsequent processes of manufacture.[1]

Pig iron is classified according to the kind of fuel used in smelting and according to the composition of the iron or the purpose for which it is adapted, and the statistics therefor are given in later tables.

[1] Establishments manufacturing ferroalloys in electric furnaces are classified in Group VIII of the chemical industry—"Chemical substances produced by the aid of electricity." The blast-furnace industry, however, includes one electric-furnace establishment producing foundry pig iron.

Summary and comparison with earlier censuses.—Table 6 summarizes the statistics of establishments engaged in the manufacture of pig iron for each census from 1899 to 1914, and gives percentages of increase.

The industry in 1914 employed 29,356 wage earners, to whom was paid $22,780,626 in wages. The value of products was reported as $317,653,983, but the cost of materials, including the large item of fuel cost, was $264,580,060, equal to 83.3 per cent of the value of products. In 1909 the corresponding ratio of material expense to value of products was 81.9 per cent; in 1904, 77.2 per cent; and in 1899, 63.6 per cent. The production of all kinds of pig iron during the census year 1914, which was one of depression, amounted to

23,269,731 tons, a decrease of 2,382,067 tons from the output of 1909. The production at the earlier censuses, prior to those given in the table, was 1,832,876 tons in 1869, 3,375,912 tons in 1879, and 8,845,185 tons in 1889. The value added by manufacture in 1914 was less than that in 1899 and in 1909, and but a little greater than in 1904. The decrease in number of wage earners, though in part due to the depression of the industry in 1914, is largely due to improvements in equipment and methods. There has been a progressive increase in the average annual pig-iron product per wage earner, from 265 tons in 1889 to 368 tons in 1899, 474 tons in 1904, 668 tons in 1909, and 793 tons in 1914. In the larger plants the pig-iron tonnage per wage earner is of course greater. The 14 establishments in 1914 producing over 500,000 tons of iron each employed 8,572 wage earners and reported an output of 10,099,376 tons, or an average of 1,178 tons per wage earner. In 1909 the corresponding output for this class of establishments, 13 in number, with 9,195 wage earners, was 10,384,146 tons, or an average of 1,129 tons per wage earner.

Table 6

	BLAST FURNACES.				PER CENT OF INCREASE.[1]		
	1914	1909	1904	1899	1909–1914	1904–1909	1899–1904
Number of establishments	160	208	190	223	−23.1	9.5	−14.8
Persons engaged	33,194	43,061	37,335	41,046	−22.9	15.3	−9.0
Proprietors and firm members	15	48	26	48			
Salaried employees	3,823	4,584	2,231	1,757	−16.6	105.5	27.0
Wage earners (average number)	29,356	38,429	35,078	39,241	−23.6	9.6	−10.6
Primary horsepower	1,222,273	1,173,422	773,278	497,272	4.2	51.7	55.5
Capital	$462,281,594	$487,580,659	$236,145,529	$143,159,232	−5.2	106.5	65.0
Salaries and wages	$28,895,203	$31,131,142	$21,825,410	$20,788,520	−7.2	42.6	5.0
Salaries	$6,114,577	$6,524,612	$2,890,897	$2,304,120	−6.3	125.7	25.5
Wages	$22,780,626	$24,606,530	$18,934,513	$18,484,400	−7.4	30.0	2.4
Paid for contract work	$265,108	$68,808	$7,871	$103,291			
Rent and taxes (including internal revenue)	$2,937,517	$2,147,148	[2] $984,636	[2] $1,010,724	36.8		−2.6
Cost of materials	$264,580,060	$320,637,889	$178,941,918	$131,503,655	−17.5	79.2	36.1
Value of products	$317,653,983	$391,429,283	$231,822,707	$206,756,557	−18.8	68.8	12.1
Value added by manufacture (value of products less cost of materials)	$53,073,923	$70,791,394	$52,880,789	$75,252,902	−25.0	33.9	−29.7
Pig iron produced, tons (2,240 pounds)	23,269,731	25,651,798	16,623,625	14,447,791	−9.3	54.3	15.1

[1] A minus sign (−) denotes decrease.

[2] Exclusive of internal revenue.

Summary, by states.—Table 7 summarizes the more important statistics of the industry, by states, the states being arranged according to the value of products reported for 1914. Some of the states for which data can not be shown separately without disclosing the operations of individual establishments, ranked higher than some of those named in the table.

Pennsylvania employed 39.2 per cent of the wage earners in 1914, and the value of products represents 42.8 per cent of the total, and the value added by manufacture 38.3 per cent, as compared with 37.8 per cent, 43.1 per cent, and 37.4 per cent, respectively, in 1909.

Table 7

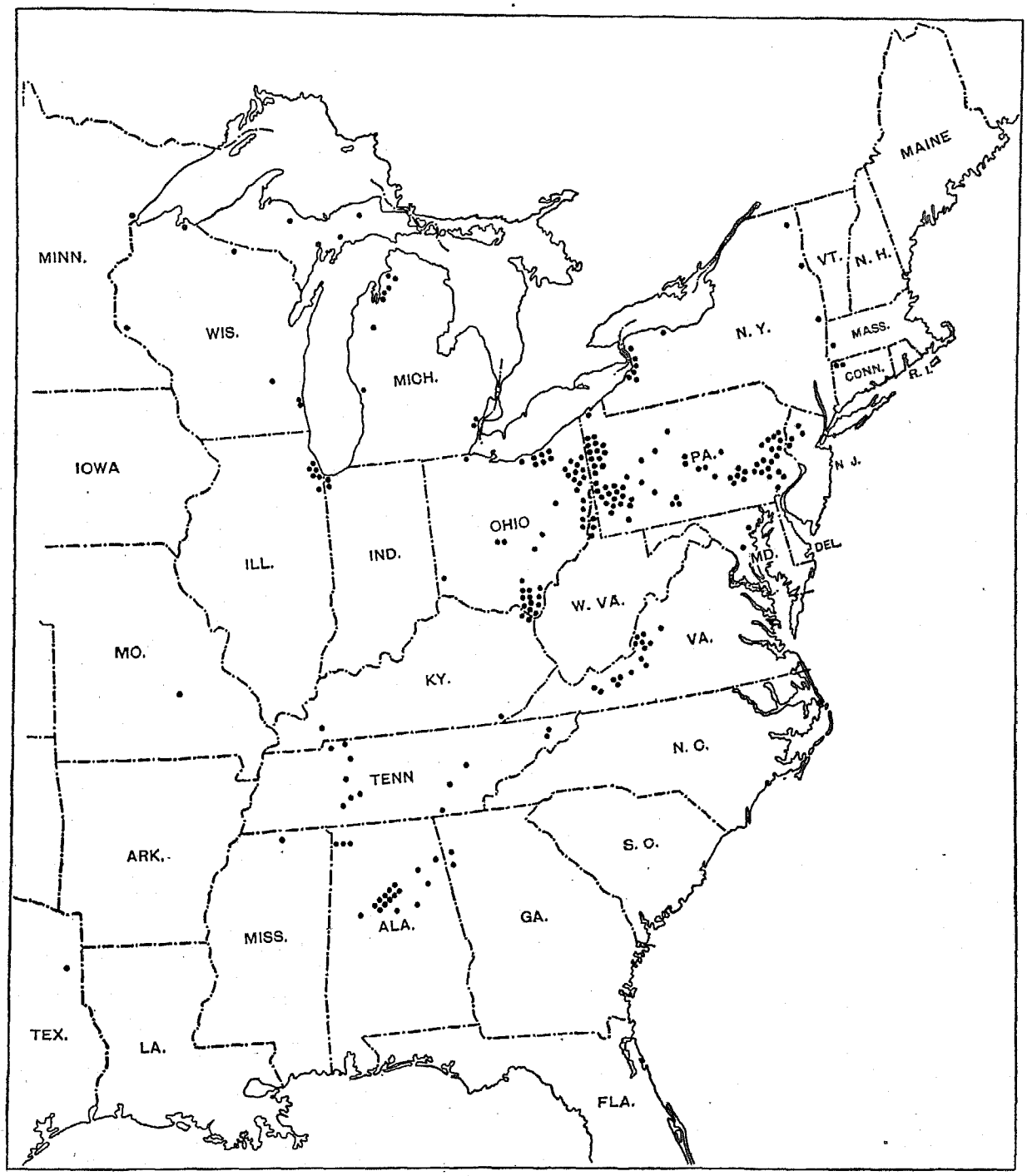
STATE.	BLAST FURNACES: 1914.												PER CENT OF INCREASE.[1]								
	Number of establishments.	Wage earners.				Products.				Value added by manufacture.			Wage earners (average number).			Value of products.			Value added by manufacture.		
		Average number.	Per cent of total.	Rank.		Total value.			Pig iron (tons).	Amount.	Per cent of total.	Rank.									
				1914	1909	Amount.	Per cent of total.	Rank. 1914	Rank. 1909	Amount.				1914	1909							
													1909–1914	1904–1909	1899–1904	1909–1914	1904–1909	1899–1904	1909–1914	1904–1909	1899–1904
United States	160	29,356	100.0			$317,653,983	100.0			23,269,731	$53,073,923	100.0		−23.6	9.6	−10.6	−18.8	68.8	12.1	−25.0	33.9	−29.7
Pennsylvania	52	11,518	39.2	1	1	135,806,067	42.8	1	1	9,743,855	20,304,678	38.3	1	−20.7	4.7	−13.7	−19.4	56.9	5.8	−23.4	25.4	−43.6
Ohio	33	5,786	19.7	2	2	72,969,368	23.0	2	2	5,279,045	12,230,844	23.0	2	−20.7	34.2	−10.0	−12.8	104.8	1.2	−19.9	82.2	−50.2
Illinois	5	1,450	4.9	5	4	25,861,528	8.1	3	3	1,843,333	4,067,381	7.7	4	−41.8	30.5	−36.5	−32.5	40.1	80.4	−45.0	−11.2	141.6
Alabama	15	3,547	12.1	3	3	20,065,739	6.3	4	5	1,835,576	6,174,746	11.6	3	−6.2	−23.6	−1.6	−5.5	27.6	23.4	7.2	2.2	−4.2
New York	8	1,832	6.2	4	5	18,485,638	5.8	5	4	1,406,455	2,198,486	4.1	6	−20.4	47.4	50.9	−30.6	208.3	71.1	−61.5	152.3	47.0
Michigan	12	991	3.4	6	8	5,450,063	1.7	7	7	361,076	1,573,484	3.0	7	−2.5	−10.8	122.0	−3.4	25.4	99.6	−1.7	3.9	67.0
Virginia	8	689	2.3	8	6	3,772,382	1.2	10	8	293,077	490,386	0.9	10	−47.8	22.1	−32.2	−30.0	61.2	−48.6	−49.5	55.1	−70.6
Tennessee	6	503	1.7	9	7	2,245,329	0.7	12	12	158,751	563,394	1.1	8	−56.0	−15.8	−23.0	−51.7	35.7	−27.0	−55.7	55.3	−46.3
All other states	21	3,040	10.4			32,997,869	10.4			2,348,563	5,470,524	10.3										

[1] Percentages are based on figures in Table 30; a minus sign (−) denotes decrease.

Geographic distribution.—The distribution of the pig-iron establishments is shown by the following map. All plants are indicated with the exception of one in Pueblo County, Colo., and an electric furnace manufacturing pig iron in Shasta County, Cal., active in 1914, and two idle plants in Oregon and Washington. Further details as to production, by states, are presented later. More than two-fifths of the pig iron is produced in the industrial district embracing western Pennsylvania, eastern Ohio, and the panhandle of West Virginia, the ores used being almost exclusively from the Lake Superior and northern

ranges, coming down by water to Lake Erie ports and thence by rail to the furnaces. Other districts using Lake Superior ores are the counties bordering on Lake Erie and on the southern end of Lake Michigan.

BLAST FURNACES—LOCATION OF ESTABLISHMENTS: 1914.



Persons engaged in the industry.—Table 8 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, and average number of wage earners, distributed by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Of the 33,194 persons engaged in the industry approximately nine-tenths are wage earners. With a few exceptions females are not employed except in clerical and subordinate salaried positions. The number in every class, with the exception of female clerks, was less in 1914 than in 1909.

Table 8

CLASS.	Census.	PERSONS ENGAGED IN THE BLAST-FURNACE INDUSTRY. Total.	Male.	Female.	Per cent of total. Male.	Female.
All classes	1914	33,194	32,813	381	98.9	1.1
	1909	43,061	42,715	346	99.2	0.8
Proprietors and officials	1914	768	765	3	99.6	0.4
	1909	1,119	1,112	7	99.4	0.6
Proprietors and firm members	1914	15	12	3	80.0	20.0
	1909	48	43	5	89.6	10.4
Salaried officers of corporations	1914	193	193	.....	100.0	.....
	1909	262	260	2	99.2	0.8
Superintendents and managers	1914	560	560	.....	100.0	.....
	1909	809	809	.....	100.0	.....
Clerks and other subordinate salaried employees	1914	3,070	2,698	372	87.9	12.1
	1909	3,513	3,182	331	90.6	9.4
Wage earners (average number)	1914	29,356	29,350	6	100.0	(1)
	1909	38,429	38,421	8	100.0	(1)
16 years of age and over	1914	29,304	29,298	6	100.0	(1)
	1909	38,361	38,353	8	100.0	(1)
Under 16 years of age	1914	52	52	.....	100.0	.....
	1909	68	68	.....	100.0	.....

[1] Less than one-tenth of 1 per cent.

In order to compare the distribution of persons engaged in the industry according to occupational status in 1914, with that shown at censuses prior to 1909, it is necessary to use the classification employed at the earlier censuses. Such a comparison is made in Table 9 for 1914, 1909, and 1904.

The decrease in the proportion which proprietors and firm members form of the total number of persons engaged in the industry is due to changes in organization, and although fewer salaried employees and wage earners were employed in 1914 than in 1909 the former show a proportionate increase and the latter a proportionate decrease for each census.

Table 9

CLASS.	PERSONS ENGAGED IN THE BLAST-FURNACE INDUSTRY. Number. 1914	1909	1904	Per cent distribution. 1914	1909	1904	Per cent of increase.[1] 1909-1914	1904-1909
Total	33,194	43,061	37,335	100.0	100.0	100.0	−22.9	15.3
Proprietors and firm members	15	48	26	(2)	0.1	0.1	.....	.....
Salaried employees	3,823	4,584	2,231	11.5	10.6	6.0	−16.6	105.5
Wage earners (average)	29,356	38,429	35,078	88.4	89.2	94.0	−23.6	9.6

[1] A minus sign (−) denotes decrease. [2] Less than one-tenth of 1 per cent.

Wage earners employed, by months.—Table 10 gives the total average number of wage earners employed during 1914, together with the total number employed on the 15th of each month, or the nearest representative day, for each state, except Indiana, in which the average number of wage earners was 500 or more in 1914. The statistics for Indiana are not given in the detail tables in order not to disclose individual operations. The average number of wage earners for the state was 820, ranging from a maximum of 924 in January to a minimum of 742 in November.

Table 10

WAGE EARNERS EMPLOYED IN THE BLAST-FURNACE INDUSTRY: 1914.
[Month of maximum employment for each state is indicated by **boldface** figures and that of minimum by *italic* figures.]

STATE.	Average number employed during year.	Number employed on 15th day of the month or nearest representative day. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Per cent minimum is of maximum.
United States	29,356	31,898	31,869	32,813	**32,851**	31,733	30,782	29,921	29,000	27,757	26,407	*23,529*	23,912	71.6
Pennsylvania	11,518	12,765	12,526	13,000	**13,230**	12,389	11,869	11,388	10,913	10,610	10,446	*9,417*	9,663	71.2
Ohio	5,786	6,277	6,199	6,449	**6,630**	6,440	6,262	5,698	5,781	5,537	5,195	*4,456*	4,508	67.2
Alabama	3,547	3,642	3,736	3,830	**3,830**	3,550	3,534	3,786	3,822	3,536	3,416	*3,063*	3,069	80.0
New York	1,832	1,859	1,905	1,932	1,898	**1,996**	1,924	1,950	1,956	1,834	1,769	*1,479*	1,482	74.1
Illinois	1,450	1,635	1,626	1,651	1,515	**1,744**	1,596	1,602	1,430	1,429	1,228	*886*	968	50.8
Michigan	991	1,175	1,193	1,081	1,146	1,055	1,063	895	921	889	886	*745*	843	62.4
Virginia	689	824	825	**844**	821	842	829	769	772	596	395	*371*	330	44.0
Tennessee	503	426	547	579	624	532	**639**	624	411	423	415	420	*396*	62.0

The figures illustrate the notable depression in the industry during the year. The maximum number for the United States was in April, and the number dropped each month to the minimum in November. In each of the states the maximum month was one prior to July, and the low month was November, with the exception of Tennessee, which reached its minimum in December. In all other states December shows a slight improvement. In Virginia the number employed in the month of minimum employment was but 44 per cent of the maximum and in Illinois but one-half, 50.8 per cent; while in Alabama, which was least affected by the depression, the minimum month was 80 per cent of the maximum.

Prevailing hours of labor.—In Table 11 the average number of wage earners reported for 1914 and 1909 for the industry has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment is classified as a total even though a few employees worked a greater or less number of hours.

The figures emphasize the tendency toward a shortening of the hours of employment. The average number of hours of labor per wage earner per week, obtained by computing the total number of hours of labor for all wage earners and dividing this total by the number of wage earners, was 68.5 in 1914 and 70.9 in 1909,

indicating an average decrease of 2.4 hours per week for the five-year period.

In making this computation the number of wage earners in each group is multiplied by the number of hours of labor per week for the group and the products of all the groups added. Those working "48 and under" have been figured at 48 hours; "between 48 and 54" at 51 hours; the "between 54 and 60" group at 57 hours; the "between 60 and 72" group at 66 hours; and the "over 72" group at 72 hours.

Table 11

STATE.	Census year.	BLAST FURNACES: AVERAGE NUMBER OF WAGE EARNERS.						
		Total.	In establishments where the prevailing hours of labor per week were—					
			54 and under.	Between 54 and 60.	60.	Between 60 and 72.	72.	Over 72.
United States	1914	29,356	[1] 1,642	13	4,474	3,029	9,119	11,079
	1909	38,429	.....	190	1,149	4,057	1,304	31,729
Alabama	1914	3,547	.....	.....	1,544	.....	196	1,807
	1909	3,783	.....	.....	108	1,454	.....	2,221
Illinois	1914	1,450	.....	.....	682	.....	268	500
	1909	2,493	.....	.....	.....	.....	.....	2,493
Michigan	1914	991	.....	.....	.....	433	.....	558
	1909	1,016	.....	.....	.....	55	.....	961
New York	1914	1,832	358	.....	382	332	760	.....
	1909	2,298	.....	.....	101	374	335	1,488
Ohio	1914	5,786	.....	.....	918	580	1,577	2,711
	1909	7,295	.....	.....	.....	606	1	6,688
Pennsylvania	1914	11,518	1,273	.....	5	562	6,114	3,564
	1909	14,521	.....	117	601	166	467	13,170
Tennessee	1914	503	.....	.....	135	111	.....	257
	1909	1,143	.....	.....	189	.....	73	881
Virginia	1914	689	.....	.....	.....	470	.....	219
	1909	1,320	.....	73	.....	145	428	674

[1] Includes 80 "between 48 and 54" hours of labor per week and 11 "48 and under" hours of labor per week.

The operation of a blast furnace is necessarily continuous and most furnaces operate with two 12-hour shifts. Of the total number of wage earners, 11,079, or 37.7 per cent, were in establishments where the prevailing hours were over 72 per week, and 9,119, or 31.1 per cent, in establishments where they were 72 per week. The corresponding percentages in 1909 were 82.6 per cent of all wage earners for those over 72 hours per week and 3.4 per cent for 72 hours per week. Only 5.6 per cent of the wage earners were employed in establishments where the prevailing hours of labor were less than 60 hours per week, in 1914, and 10.3 per cent in establishments where they were between 60 and 72 per week; the corresponding percentages in 1909 being 3.5 per cent and 10.6 per cent, respectively.

Character of ownership.—The industry is one of large units and is mainly in the hands of corporations. Only 5 of the establishments were owned by individuals or firms in 1914, and the value of the products of such establishments was $3,455,143, or 1.1 per cent of the total. In 1909 the establishments owned by individuals or firms constituted 5.8 per cent of the total number and their products 1.3 per cent of the total in value.

Size of establishments.—The tendency of the industry to become concentrated in large establishments is indicated by the statistics given in Table 12. In this classification each establishment is considered by itself regardless of whether two or more plants are controlled by a single concern.

The establishments reporting products valued at $1,000,000 or over constituted 41.3 per cent of the total number in both 1914 and 1909, and 25.8 per cent in 1904, and they reported 85.9 per cent of the total value of products in 1914, 85.8 per cent in 1909, and 74.8 per cent in 1904. With respect to wage earners this major group employed 72.1 per cent in 1914 and 72.7 per cent in 1909.

Table 12

	Census year.	BLAST FURNACES.			
		Total.	Value of products per establishment.		
			Less than $100,000.	$100,000 to $1,000,000.	$1,000,000 and over.
Number of establishments.	1914	160	12	82	66
	1909	208	14	108	86
	1904	190	19	122	49
Number of wage earners...	1914	29,356	138	8,054	21,164
	1909	38,429	287	10,207	27,935
	1904	35,078	(1)	(1)	(1)
Value of products.....	1914	$317,653,983	$562,742	$44,191,948	$272,899,293
	1909	$391,429,283	$700,718	$54,735,742	$335,992,823
	1904	$231,822,707	$783,533	$57,717,931	$173,321,243
Pig iron produced, tons....	1914	23,269,731	22,698	3,349,367	19,897,666
	1909	25,651,798	31,123	3,536,186	22,084,489
	1904	16,623,625	45,334	4,352,893	12,225,398
Per cent distribution:					
Number of establishments.	1914	100.0	7.5	51.3	41.3
	1909	100.0	6.7	51.9	41.3
	1904	100.0	10.0	64.2	25.8
Number of wage earners.	1914	100.0	0.5	27.4	72.1
	1909	100.0	0.7	26.6	72.7
Value of products.....	1914	100.0	0.2	13.9	85.9
	1909	100.0	0.2	14.0	85.8
	1904	100.0	0.3	24.9	74.8
Pig iron produced.....	1914	100.0	0.1	14.4	85.5
	1909	100.0	0.1	13.8	86.1
	1904	100.0	0.3	26.2	73.5

[1] Figures not available.

The average value of products per establishment, all establishments considered, was $1,220,000 in 1904, $1,882,000 in 1909, and $1,985,000 in 1914, and the average pig-iron tonnage output per establishment was 87,493 tons in 1904, 123,326 tons in 1909, and 145,436 tons in 1914.

Table 13 shows the size of establishments in 1914 and 1909 as measured by the number of wage earners employed for the industry as a whole and the eight leading states.

The prevailing group for the industry as a whole is the "101 to 250" group. This embraced 38.1 per cent of the establishments in 1914 and 35.6 per cent in 1909; and 34.1 per cent of the wage earners in 1914, and 31.1 per cent in 1909. The industry is one of large units and five-sixths of the establishments employed 51 or more wage earners each.

Table 13

STATE.	Census year.	TOTAL.		BLAST FURNACES—ESTABLISHMENTS EMPLOYING—													
				1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.	
		Establishments.	Wage earners (average number.)	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States	1914	160	29,356	3	12	11	143	12	465	40	3,034	61	10,016	20	6,266	12	8,157	1	1,263
	1909	208	38,429	2	7	9	115	26	988	52	4,094	74	11,958	31	10,496	13	9,241	1	1,527
Alabama	1914	15	3,547	.....	.....	.....	.....	1	30	2	163	6	982	5	1,700	1	672	.....	.....
	1909	19	3,783	.....	.....	.....	.....	2	73	3	211	10	1,529	2	727	2	1,243	.....	.....
Illinois	1914	5	1,450	.....	.....	.....	.....	.....	.....	.....	.....	3	512	1	256	1	682	.....	.....
	1909	6	2,493	.....	.....	.....	.....	.....	.....	1	80	.....	.....	3	900	2	1,513	.....	.....
Michigan	1914	12	991	.....	.....	1	12	3	115	5	329	3	535	.....	.....	.....	.....	.....	.....
	1909	11	1,016	.....	.....	.....	.....	2	75	6	394	2	284	1	263	.....	.....	.....	.....
New York	1914	8	1,832	.....	.....	.....	.....	.....	.....	2	184	4	731	1	358	1	559	.....	.....
	1909	9	2,298	.....	.....	.....	.....	.....	.....	3	281	2	348	3	1,149	1	520	.....	.....
Ohio	1914	33	5,756	.....	.....	4	57	.....	.....	10	740	11	1,731	5	1,533	3	1,725	.....	.....
	1909	40	7,295	1	2	.....	.....	3	112	8	632	20	3,155	6	2,198	2	1,196	.....	.....
Pennsylvania	1914	52	11,518	1	5	3	36	6	250	7	577	24	3,917	5	1,470	5	4,000	1	1,263
	1909	66	14,521	1	5	5	55	6	251	15	1,137	22	3,988	11	3,705	5	3,903	1	1,527
Tennessee	1914	6	503	.....	.....	1	14	1	42	2	172	2	275	.....	.....	.....	.....	.....	.....
	1909	13	1,143	.....	.....	.....	.....	6	241	5	404	1	189	1	309	.....	.....	.....	.....
Virginia	1914	8	689	.....	.....	.....	.....	1	28	5	362	2	299	.....	.....	.....	.....	.....	.....
	1909	14	1,320	.....	.....	1	20	1	50	7	616	5	634	.....	.....	.....	.....	.....	.....

Table 14 shows the per cent distribution of the wage earners by groups for 1914 and 1909.

Table 14

STATE.	Census year.	BLAST FURNACES—PER CENT OF TOTAL AVERAGE NUMBER OF WAGE EARNERS IN ESTABLISHMENTS EMPLOYING SPECIFIED NUMBER.							
		1 to 5	6 to 20	21 to 50	51 to 100	101 to 250	251 to 500	501 to 1,000	Over 1,000
United States	1914	(1)	0.5	1.6	10.3	34.1	21.3	27.8	4.3
	1909	(1)	0.3	2.6	10.7	31.1	27.3	24.0	4.0
Alabama	1914	.....	.....	0.8	4.6	27.7	47.9	18.9	.....
	1909	.....	.....	1.9	5.6	40.4	19.2	32.9	.....
Illinois	1914	.....	.....	.....	.....	35.3	17.7	47.0	.....
	1909	.....	.....	.....	3.2	.....	36.1	60.7	.....
Michigan	1914	.....	1.2	11.6	33.2	54.0	.....	.....	.....
	1909	.....	.....	7.4	38.8	28.0	25.9	.....	.....
New York	1914	.....	.....	.....	10.0	39.9	19.5	30.5	.....
	1909	.....	.....	.....	12.2	15.1	50.0	22.6	.....
Ohio	1914	.....	1.0	.....	12.8	29.9	26.5	29.8	.....
	1909	(1)	.....	1.5	8.7	43.2	30.1	16.4	.....
Pennsylvania	1914	(1)	0.3	2.2	5.0	34.0	12.8	34.7	11.0
	1909	(1)	0.4	1.7	7.8	27.1	25.5	26.9	10.5
Tennessee	1914	.....	2.8	8.3	34.2	54.7	.....	.....	.....
	1909	.....	.....	21.1	35.3	16.5	27.0	.....	.....
Virginia	1914	.....	.....	4.1	52.5	43.4	.....	.....	.....
	1909	.....	1.5	3.8	46.7	48.0	.....	.....	.....

[1] Less than one-tenth of 1 per cent.

Expenses.—The census does not purport to furnish figures that can be used to determine cost of manufacture, but the relative importance of material expense and labor or service expense as reported at the different censuses is a matter of interest.

In 1914 the expenses reported—comprising, (1) salaries, (2) wages, (3) cost of materials, and (4) rent, taxes, and contract work—were equal in the aggregate to 93.4 per cent of the value of all products. The ratio in 1909, for the same classes of expense, was 90.4 per cent, in 1904, 87 per cent, and in 1899, 74.2 per cent. These figures indicate for these successive census periods a narrowing margin between these specific factors of production cost and product value. Of course the trade depression of 1914 is largely accountable for the high expense ratio of that year. Of the leading states the lowest ratio of total expenses reported to value of products was in Alabama (82 per cent), and the ratio was highest in New York, Virginia, and Wisconsin.

Materials, including fuel, is the principal expense item, and taking total expenses reported as a base, materials formed 89.2 per cent in 1914, wages 7.7 per cent, salaries, 2 per cent (or wages and salaries, 9.7 per cent), and rent, taxes, and contract work, 1.1 per cent. In 1909 materials formed 90.6 per cent and wages and salaries 8.8 per cent of the expense total; in 1904 the percentages were 88.7 and 10.8, respectively; and in 1899, 85.8 and 13.6. Ranked according to the proportion that material expense is of total expenses reported, beginning with maximum—the converse being minimum proportion for wages and salaries to total expenses reported—the order for the leading states is: Illinois, Pennsylvania, Ohio, New York, Virginia, Wisconsin, Alabama, Tennessee, and Michigan.

The relatively high labor ratio for Michigan is due largely to the fact that most of the plants are charcoal furnaces manufacturing their own charcoal, and in some cases the labor employed in woodcutting and charcoal burning was charged not to material, but to labor.

Engines and power.—Power data were first reported for the industry at the census of 1869, 63,900 horsepower. Table 15 shows for the censuses 1904 to 1914, inclusive, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated by establishments reporting.

Table 15

BLAST FURNACES.

POWER.	Number of engines or motors.			Horsepower.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	2,345	3,093	1,617	1,222,273	1,173,422	773,278	100.0	100.0	100.0
Owned	1,874	2,640	1,603	1,200,672	1,158,572	773,139	98.2	98.7	100.0
Steam engines and turbines [1]	1,734	[2] 2,568	1,555	1,005,374	[2] 1,033,033	768,702	82.2	88.0	99.4
Internal-combustion engines	104	60	27	194,037	125,230	3,757	15.9	10.7	0.5
Water wheels, turbines, and motors	36	12	21	1,261	309	680	0.1	(3)	0.1
Rented, electric	471	453	14	21,601	14,850	139	1.8	1.3	(3)
Electric	5,072	3,462	1,384	212,582	135,143	52,616	100.0	100.0	100.0
Rented	471	453	14	21,601	14,850	139	10.2	11.0	0.3
Generated by establishments reporting	4,601	3,009	1,370	190,981	120,293	52,471	89.8	89.0	99.7

[1] Figures for horsepower include for 1904, 6,320 horsepower reported under the head of "other" owned power.
[2] Includes some steam pumps and auxiliary engines.
[3] Less than one-tenth of 1 per cent.

The power equipment is that installed at the end of the year and is of course far beyond the requirement of the plants for a year of restricted output. A striking feature is the increase in the use of gas or internal-combustion engines. Blast-furnace gas, formerly a waste product, is now extensively used for gas engines, some of which rank in power with the largest steam engines. There is also a marked increase in electric-motor equipment for utilizing generated electric power. In 1914 the plants equipped with such motors aggregated 190,981 horsepower capactiy, an increase of 58.8 per cent over that for 1909, although the ratio of increase for power owned was but 3.6 per cent.

The gas-engine power included in the foregoing table is that directly chargeable to blast-furnace operations. A considerable amount of blast-furnace gas is utilized by certain of the companies in gas engines generating power for other departments—steel works, rolling mills, etc.—affiliated with the blast furnaces. Including the gas engines chargeable to other departments as well as those reported under the blast-furnace industry, there were 144 gas engines operated with blast-furnace gas in 1914 of 380,820 horsepower capacity, and in 1909, 85 gas engines of 190,040 horsepower capacity, an increase of 69.4 per cent in number and 92.3 per cent in capacity. The figures for power, by states, is given in Table 31. The use of water power direct is a small factor. Gas engines in 1914 constituted 15.9 per cent of all primary power as compared with 10.7 per cent in 1909. In Pennsylvania gas engines constituted 12.7 per cent of the total primary power for the state in 1914 and 5.3 per cent in 1909; in Ohio, 14.9 per cent in 1914 and 8.7 per cent in 1909; in New York, 35.1 per cent in 1914 and 36 per cent in 1909; and in Illinois, 10.6 per cent in 1914 and 10 per cent in 1909. Indiana, included under "all other states" (Table 31), with a total of 72,885 primary horsepower, has 46,400 horsepower, or 63.7 per cent, in gas engines, as compared with 61.7 per cent in 1909.

Fuel.—Table 16 shows, for 1914, the quantity of each kind of fuel used for which data were obtained, for the industry as a whole and for the leading states.

Table 16

BLAST FURNACES: 1914.

STATE.	Coal.		Coke (tons, 2,000 lbs.).	Oil, including gasoline (barrels).	Gas (1,000 cubic feet).	Charcoal (bushels).
	Anthracite (tons, 2,240 lbs.).	Bituminous (tons, 2,000 lbs.).				
United States	47,060	1,892,357	26,335,234	80,474	242,218	29,083,975
Alabama	.....	98,197	2,568,150	.....	25,353	3,552,097
Illinois	.....	56,723	1,941,514	.....	.....	.....
Michigan	.....	14,701	190,204	3	.....	18,816,032
New York	1,341	67,098	1,718,352	.....	.....	.....
Ohio	.....	195,862	5,736,226	9,588	11,775	344,000
Pennsylvania	45,369	919,391	11,157,627	75	178,780	499,970
Tennessee	.....	19,808	235,760	.....	.....	323,221
Virginia	.....	33,122	478,026	.....	.....	700,006
All other states	350	487,455	2,309,375	70,808	26,310	4,848,652

The coke, charcoal, and anthracite coal are essentially all used for smelting; the bituminous coal and gas for steam raising. The total consumption of coke for smelting was 26,883,082 tons. Some of the bituminous coal was coked at the blast furnaces, this fuel figuring as coal in the above table. On the other hand a small amount of coke was used for purposes other than smelting. In 1914 only 60,337 short tons of bituminous coal was used for smelting in conjunction with coke (mixed coke and raw coal), all in Illinois, Ohio, and Pennsylvania. The total expenditure for fuel and rent of power in 1914, including that for smelting and for steam raising, was $88,585,592, as compared with $108,536,921 in 1909, a decrease of 18.4 per cent, due to the 1914 industrial depression. In 1914 fuel and rent of power accounted for 33.5 per cent of the total cost of materials, as compared with 33.8 per cent in 1909, 35.1 per cent in 1904, and 33.6 per cent in 1899. The coke production of the country, not including gas-house coke, was 34,555,914 short tons in 1914, of which 77.8 per cent, was consumed by the blast furnaces. In 1909 the coke production was 39,315,065 tons, of which the blast furnaces took for smelting 31,436,536 tons, or 80 per cent. Practically the same quantity of coke (other than gas-house coke) was available for other manufac-

turing and industrial arts in each year, namely, 7,672,532 tons in 1914 and 7,878,529 tons in 1909.

The gas reported in Table 16 is natural gas. It does not include blast-furnace gas. In 1914, 39 establishments reported the utilization of 1,408,479,975 thousand cubic feet of blast-furnace gas. Of this amount 354,669,345 thousand cubic feet, or 25 per cent, was used in other departments, and 75 per cent was used in connection with the blast furnaces. The blast-furnace products include the value of the gas used in the steel, rolling, and other departments, $2,341,123. Of the 39 establishments reporting the utilization of blast-furnace gas, 16 reported 144 gas engines operated with this gas. These 39 establishments had 116 active furnaces of 50,046 tons daily capacity.

SPECIAL STATISTICS RELATING TO MATERIALS, PRODUCTS, AND EQUIPMENT.

Table 17 shows the quantity and cost of the materials used during each census year, 1899 to 1914.

The distribution of the cost of materials, for 1914, is 59.5 per cent for iron ore and other iron-bearing material, 32.3 per cent for fuel for smelting, 4.3 per cent for fluxes, and 3.9 per cent for all other materials. The corresponding percentages for 1909 were 60.1, 33.1, 3.8, and 3, respectively.

Table 17

	BLAST FURNACES—MATERIALS USED. (TON, 2,240 POUNDS.)				PER CENT OF INCREASE.[1]		
	1914	1909	1904[2]	1899	1909–1914	1904–1909	1899–1904
Total cost	$264,580,060	$320,637,889	$178,941,918	$131,503,655	−17.5	79.2	36.1
Iron ore:							
Tons	43,326,817	48,353,677	30,032,862	25,366,894	−10.4	61.0	18.4
Cost	$150,855,740	$187,264,601	$100,945,369	$65,902,922	−19.4	85.5	53.2
Domestic—							
Tons	41,556,642	46,605,930	29,202,944	24,612,511	−10.8	59.6	18.7
Cost	$141,276,713	$177,589,789	$96,206,246	$61,795,473	−20.4	84.6	55.7
Foreign—							
Tons	1,770,175	1,747,747	829,918	754,383	1.3	110.6	10.0
Cost	$9,579,027	$9,674,812	$4,739,123	$4,107,449	−1.0	104.1	15.4
Mill cinder, scale, scrap, slag, etc.:							
Tons	2,168,092	1,982,530	1,865,385	1,600,313	9.4	6.3	16.6
Cost	$6,651,055	$5,544,859	$3,830,961	$3,772,385	20.0	44.7	1.6
Fluxes:							
Tons	11,499,685	13,570,845	8,325,209	7,324,743	−15.3	63.0	13.7
Cost	$11,184,378	$12,239,493	$6,888,647	$5,054,725	−8.6	77.7	36.3
Fuel for smelting, cost	$85,436,530	$105,994,112			−19.4		
Coke—							
Tons (2,000 pounds)	26,883,082	31,436,536	19,739,671	16,461,533	−14.5	59.3	19.9
Cost	$83,499,448	$102,134,423	$57,126,997	$38,976,770	−18.2	78.8	46.6
Charcoal—							
Bushels	29,083,978	38,032,618	37,273,569	30,677,585	−23.5	2.0	21.5
Cost	$1,683,075	$2,787,026	$2,521,887	$1,823,881	−39.6	10.5	38.3
Anthracite—							
Tons	38,874	265,401			−85.4		
Cost	$158,377	$904,102			−82.6		
Bituminous coal—			$3,239,305	$3,398,731		11.6	−4.7
Tons (2,000 pounds)	60,337	115,173			−47.6		
Cost	$95,630	$168,561			−43.3		
Cost of fuel for generating power and rent of power	$3,150,062	$2,542,809			23.9		
All other materials, cost	$7,302,295	$7,052,015	$4,388,752	$12,574,241			

[1] A minus sign (−) denotes decrease.

[2] Excludes statistics for a blast furnace operated by a penal institution.

The furnaces consumed 45,494,909 tons of iron-bearing material in 1914, comprising 43,326,817 tons of iron ore and 2,168,092 tons of mill cinder, scale, scrap, slag, etc., the latter constituting 4.8 per cent of the total, as compared with 3.9 per cent in 1909.

Ore.—The ore consumption includes 41,556,642 tons of domestic ore and 1,770,175 tons of foreign ore, the domestic ore constituting 95.9 per cent and the foreign ore 4.1 per cent of the total ore consumption, as compared with 96.4 and 3.6 per cent, respectively, in 1909; 97.2 and 2.8 in 1904; and 97 and 3 in 1899.

The consumption of domestic iron ore by blast furnaces and by steel works and rolling mills in 1914, aggregated 42,526,259 tons, this including 969,617 tons used in steel and rolling mill furnaces. There were mined in 1914, 41,439,761 tons of iron ore. In addition there were produced 100,198 tons of manganiferous residuum from zinc roasting which is smelted to spiegeleisen, and 445,827 tons of manganiferous ores. The statistics thus indicate a reduction in domestic ore stocks of half a million or more tons at the end of the year, as compared with the close of the preceding year.

The bulk of the foreign ore is used in Pennsylvania and Maryland. In addition to the 1,770,175 tons of foreign ore consumed by the blast furnaces, a consumption of 29,855 tons was reported by steel and rolling mill furnaces, or a total of 1,800,030 tons. The importations of iron ore during 1914 were 1,350,588 tons and of manganese ore, 283,294 tons; a total of 1,633,882 tons. Of course the consumption of ores, both domestic and foreign, in 1914, included considerable amounts of the 1913 stocks, which greatly exceeded those of 1914 both as to domestic and foreign origin.

Yield obtained from ore and other iron-bearing material.—There were produced from the 45,494,909 tons of iron-bearing material smelted in 1914, 23,269,731

tons of pig iron, an average yield of 51.1 per cent. The average yield in 1909, was 51 per cent, in 1904, 52.1 per cent, in 1899, 53.6 per cent, in 1889, 54.7 per cent, and in 1879, 49.7 per cent. Although these variations in yield are due in part to changes in the proportion of foreign ore, and of mill cinder, scrap, etc., used, they are due chiefly to changes in the grade of domestic ore used. The increase in the percentage of yield for the decade 1879–1899 was due to the development of the rich deposits of Lake Superior. In the early years almost all ore shipped from the Lake Superior region analyzed over 60 per cent iron, but in later years more and more ores of lower grade have been sent down to the furnaces.

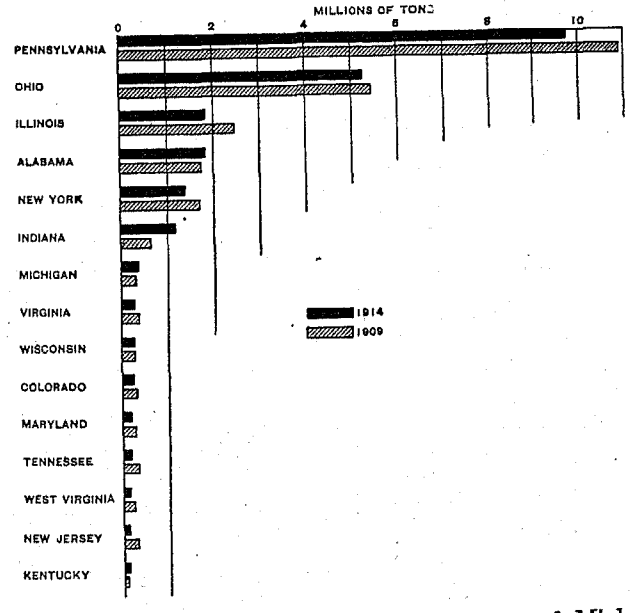
Table 18 shows the average percentage of yield for furnaces using Lake Superior ores exclusively, and for those using Southern ores exclusively, 1879 to 1914, inclusive.

Table 18

CLASS.	BLAST FURNACES—AVERAGE PERCENTAGE OF PIG IRON FROM ORE.					
	1914	1909	1904	1899	1889	1879
All furnaces	51.1	51.0	52.1	53.6	54.7	49.7
Furnaces using Lake Superior ores exclusively	52.3	52.3	53.4	57.7	63.3	58.2
Furnaces using Southern ores exclusively	42.2	40.6	41.4	43.1	44.1	43.6

Total production of pig iron, by states.—The following diagram shows the production of pig iron, by states, for states having a product in excess of 200,000 tons in 1914 or 1909. The product of all states not shown in the diagram aggregated but 192,226 tons in 1914.

PIG-IRON PRODUCTION OF LEADING STATES: 1914 AND 1909.



Of the states shown, Alabama, Indiana, and Michigan are the only ones that had a larger production in 1914 than in 1909, but the output of these states in 1914 was materially less than in 1913.

Comparative statistics, by states, of the number of furnaces (stacks) in active establishments, and the tonnage and value of the pig-iron product are given in Table 19.

Table 19

STATE.	BLAST FURNACES—PIG IRON. Number of furnaces.[1]	Tons.	Per cent of total.	Rank of state.	Value.
United States:					
1914	[2] 353	23,269,731	100.0	.....	$312,761,617
1909	388	25,651,798	100.0	.....	387,830,443
1904	343	16,623,625	100.0	.....	228,911,116
1899	343	14,447,791	100.0	.....	206,512,755
Pennsylvania:					
1914	137	9,743,855	41.9	1	134,465,078
1909	145	10,911,676	42.5	1	167,588,407
1904	131	7,729,278	46.5	1	107,395,757
1899	136	6,778,584	46.9	1	101,555,787
Ohio:					
1914	61	5,279,045	22.6	2	71,686,701
1909	67	5,446,971	21.2	2	82,048,712
1904	53	2,987,787	18.0	2	40,705,777
1899	51	2,559,694	17.7	2	40,308,758
Illinois:					
1914	24	1,843,333	7.9	3	25,360,306
1909	23	2,468,772	9.6	3	38,299,897
1904	21	1,660,610	10.0	3	25,508,271
1899	17	1,469,530	10.2	3	15,033,696
Alabama:					
1914	36	1,835,576	7.9	4	19,909,045
1909	40	1,764,544	6.9	4	21,221,707
1904	38	1,471,378	8.9	4	16,614,577
1899	37	1,203,277	8.3	4	13,487,769
New York:					
1914	21	1,406,455	6.0	5	18,175,036
1909	18	1,717,091	6.7	5	26,596,413
1904	15	609,588	3.7	5	8,411,946
1899	12	334,512	2.3	7	5,042,550
Michigan:					
1914	13	361,076	1.6	7	4,931,811
1909	12	327,644	1.3	9	5,694,564
1904	11	270,933	1.6	9	4,630,183
1899	7	141,377	1.0	12	2,327,153
Virginia:					
1914	11	293,077	1.3	8	3,753,082
1909	17	387,328	1.5	7	5,324,997
1904	13	279,103	1.7	8	3,333,273
1899	19	428,117	3.0	5	6,505,218
Wisconsin:					
1914	7	269,650	1.2	9	3,712,223
1909	6	285,454	1.1	13	4,591,351
1904	5	180,141	1.1	12	2,761,107
1899	6	217,451	1.5	9	2,899,912
Tennessee:					
1914	6	158,751	0.7	12	2,244,015
1909	15	333,416	1.3	8	4,644,667
1904	19	303,624	1.8	6	3,426,932
1899	17	374,249	2.6	6	4,693,215
All other states:					
1914	[2] 37	2,078,913	8.9	.....	28,524,320
1909	45	2,008,902	7.8	.....	31,819,728
1904	37	1,122,183	6.7	.....	16,123,293
1899	41	941,000	6.5	.....	14,658,697

[1] Number of completed furnaces at end of year in active establishments.
[2] Includes one electric-charcoal furnace in California.

In 1914, Pennsylvania, Ohio, Illinois, Alabama, and New York collectively produced 86.3 per cent of the pig-iron output, as compared with 86.9 per cent in 1909; but the percentages for Pennsylvania, Illinois, and New York are less in 1914 than in 1909, and those for Ohio and Alabama greater. There is considerable diversity in the average values per ton in the several states, due to differences in grade of iron, in method of disposition of output, and in distance from markets. In some states a large part of the product is delivered molten to steel works forming part of the same plant and the value is an assigned value, while in other states the entire product is cast and sold. Because of this lack of significance average values, by states, have not been deduced. The assigned values given to interplant transfers conform in general to the commercial values of pig iron sold in the open market.

Production of pig iron, by kind of fuel used.—Table 20 shows the tonnage and value of the pig-iron product, classified according to kind of fuel used in smelting, for the census years 1899 to 1914, inclusive, the per cent each grade forms of the total for each year, the percentages of increase for the census periods, and the average values per ton.

Table 20

PRODUCT, PIG IRON, BY KIND OF FUEL.	BLAST FURNACES—PRODUCTS.				PER CENT DISTRIBUTION.				PER CENT OF INCREASE.[1]			AVERAGE VALUE PER TON.			
	1914	1909	1904	1899	1914	1909	1904	1899	1909–1914	1904–1909	1899–1904	1914	1909	1904	1899
All product, value	$317,653,983	$391,429,283	$231,822,707	$206,756,557					−18.8	68.8	12.1				
Pig iron:															
Tons	23,269,731	25,651,798	16,623,625	14,447,791	100.0	100.0	100.0	100.0	−9.3	54.3	15.1	$13.44	$15.12	$13.77	$14.29
Value	$312,761,617	$387,830,443	$228,911,116	$206,512,755					−19.4	69.4	10.8				
Mineral fuel—															
Tons	22,994,441	25,279,563	16,214,123	14,095,675	98.8	98.5	97.5	97.5	−9.0	55.9	15.0	13.41	15.06	13.69	14.22
Value	$308,316,927	$380,646,786	$221,918,031	$200,441,796					−19.0	71.5	10.7				
Coke—															
Tons	22,787,890	24,522,152			97.9	95.6			−7.1			13.36	15.01		
Value	$304,356,130	$368,131,822							−17.3						
Bituminous coal and coke mixed—			14,909,029	12,253,818			89.6	84.8		65.1	21.7			13.67	14.18
Tons	[2] 118,632	86,420			0.5	0.3			37.6	81.4	17.3				
Value	$2,704,134	$1,552,814	$203,814,049	$173,763,091					74.1			22.79	17.97		
Anthracite and anthracite and coke mixed—															
Tons	87,919	670,991	1,305,094	1,841,857	0.4	2.6	7.9	12.7	−86.9	−48.6	−29.1	14.29	16.34	13.87	14.48
Value	$1,256,663	$10,962,150	$18,103,982	$26,678,705					−88.5	−39.4	−32.1				
Charcoal—															
Tons	[3] 275,290	372,235	409,502	[4] 352,116	1.2	1.5	2.5	2.5	−26.0	−9.1	16.3	16.15	19.30	17.08	17.24
Value	$4,444,690	$7,183,657	$6,993,085	$6,070,959					−38.1	2.7	15.2				
All other products, value	$4,892,366	$3,598,840	$2,911,591	$243,802											

[1] A minus sign (−) denotes decrease.
[2] Includes a considerable amount of ferromanganese pig iron.
[3] Includes a small amount made with electricity and charcoal.
[4] Includes 52,992 tons of mixed charcoal and coke.

At the census of 1879 coke iron constituted 40.1 per cent of the total production, anthracite iron 48.3 per cent, and charcoal iron 11.5 per cent. In 1889 the ratios had shifted to 70.8 per cent for coke iron, 22.5 per cent for anthracite, and 6.7 per cent for charcoal; and in 1899 and subsequent years to the ratios as given in the table.

A considerable amount of pig iron is made with dry or partially dried air, air from which excess of moisture has been extracted so that the moisture factor is constant. The diurnal variations in the humidity of the atmosphere, and the differences betwixt summer and winter, and day and night, affect the uniform operation of a furnace, a high degree of humidity increasing the coke ratio and lowering the output. In 1914, 719,140 tons of pig iron were thus made.

Charcoal iron.—For censuses prior to 1909 separate statistics were presented for furnaces using mineral fuel and for those using charcoal. Iron is largely smelted with bituminous fuel, but the special character of the charcoal branch of the industry renders it desirable to present the more important data for it separately. In 1854 charcoal iron was in the lead. The total pig-iron production was 657,337 tons, comprising 305,623 tons of charcoal iron, 303,067 tons of anthracite, and 48,647 tons of bituminous. In 1855 the production of anthracite iron exceeded that of charcoal, and in 1869 the production of iron made with bituminous fuel for the first time exceeded that made with charcoal, anthracite iron being still in the lead. In 1875 the bituminous-iron product was greater than the anthracite product, and since 1883 has exceeded that of anthracite and charcoal combined.

Table 21 gives the statistics for the charcoal branch of the industry for the census years 1899 to 1914, inclusive.

Table 21

	BLAST FURNACES MAKING CHARCOAL IRON.			
	1914	1909	1904[1]	1899[1]
Number of establishments	[2] 25	26	32	31
Salaried employees and wage earners	1,613	1,663	2,405	1,653
Salaried employees	143	157	200	147
wage earners (average number)	1,470	1,506	2,205	1,506
Capital	$13,296,228	$13,134,320	$9,778,981	$5,712,039
Salaries and wages	$1,208,740	$1,178,612	$1,223,984	$715,478
Salaries	$259,426	$261,091	$260,350	$169,120
Wages	$949,314	$917,521	$963,634	$546,358
Materials	$3,715,978	$5,609,250	$5,056,194	$3,216,895
Value of products	$5,237,008	$7,815,275	$7,388,748	$5,277,870
Pig iron—				
Tons	275,290	372,235	409,502	299,124
Value	$4,444,690	$7,183,657	$6,993,085	$5,272,094
All other products, value	$792,318	$631,618	$395,663	$5,776
Value added by manufacture (value of products less cost of materials)	$1,521,030	$2,206,025	$2,332,554	$2,060,975
Principal materials:				
Iron ore—				
Tons	542,458	755,075	809,438	588,861
Cost	$1,568,343	$2,401,381	$2,032,596	$1,054,950
Mill cinder, scrap, etc.—				
Tons	940	94	549	949
Cost	$14,957	$263	$2,045	$3,224
Fluxes—				
Tons	48,366	64,678	68,884	68,483
Cost	$53,380	$67,311	$67,089	$50,391
Charcoal—				
Bushels	29,083,978	38,032,618	[3] 39,756,724	28,527,512
Cost	$1,683,075	$2,787,026	$2,694,189	$1,722,572

[1] Not including a blast furnace operated by a penal institution.
[2] Includes one electric-charcoal furnace.
[3] Includes 2,486,700 bushels of charcoal, the stumpage and labor cost of which was reported under "wages" and "material" expense.

The number of wage earners and the value of products in 1914 were less than for either of the prior census years, the number of wage earners showing a decrease of 2.4 per cent as compared with 1909, and value of products a decrease of 33 per cent. The average value of the charcoal-pig iron in 1914, $16.21 per ton,

was less than for either of the prior census years. The per cent which the value added by manufacture (value of products less cost of materials) is of value of products, is high on account of the inclusion of charcoal-burning operations by some of the plants. This per cent ratio was 29 in 1914, whereas for the blast-furnace industry as a whole the value added by manufacture is equal to but 16.7 per cent of the value of products.

Pig iron produced for consumption.—Production for consumption was reported by 64 establishments in 1914, by 57 in 1909, and by 52 in 1904. Table 22 gives the statistics bearing on this subject.

Table 22

	BLAST FURNACES—PRODUCTION FOR CONSUMPTION.			PER CENT OF TOTAL.			PER CENT OF INCREASE.[1]	
	1914	1909	1904	1914	1909	1904	1909–1914	1904–1909
Number of establishments	160	208	190	100.0	100.0	100.0	.....	.....
Producing for consumption	64	57	52	40.0	27.4	27.4	.....	.....
Producing for sale only	96	151	138	60.0	72.6	72.6	.....	.....
Pig-iron production, tons	23,269,731	25,651,798	16,623,625	100.0	100.0	100.0	−9.3	54.3
For consumption in works of company producing	15,495,004	15,858,203	9,926,545	66.6	61.8	59.7	−2.3	59.8
Consumed by steel works and rolling mills during the year	15,219,696	15,252,736	(2)	65.4	59.5	.....	−0.2	.....
Balance for foundries	275,308	605,467	(2)	1.2	2.3	.....	−54.5	.....
For sale	7,774,727	9,793,595	6,697,080	33.4	38.2	40.3	−20.6	46.2
Purchased by steel works and rolling mills during the year	2,209,961	3,824,153	2,264,683	9.5	14.9	13.6	−42.2	68.9
Balance for foundries, export, etc.	5,564,766	5,969,442	4,432,397	23.9	23.3	26.7	−6.8	34.7

[1] A minus sign (−) denotes decrease. [2] Figures not available.

The 64 establishments that produced for consumption had an output of 17,993,578 tons in 1914, or 77.3 per cent of the total product, of which amount 15,495,004 tons were for consumption and 2,498,574 tons for sale. In 1909 the companies making for consumption, wholly or in part, had an aggregate output of 16,890,473 tons, or 65.8 per cent of the total, and in 1904, 10,909,371 tons, or 65.6 per cent of the total.

Production of pig iron, by grades.—Table 23 gives the production of pig iron classified by grades for the census years 1899 to 1914. The statistics by states for 1914 are given in Table 29.

Table 23

GRADE.	BLAST FURNACES—PIG-IRON PRODUCTION (TONS).				PER CENT OF TOTAL				PER CENT OF INCREASE.[1]		
	1914	1909	1904	1899	1914	1909	1904	1899	1909–1914	1904–1909	1899–1904
Total	23,269,731	25,651,798	16,623,625	14,447,791	100.0	100.0	100.0	100.0	−9.3	54.3	15.1
Basic	9,465,853	7,741,759	2,553,940	937,439	40.7	30.2	15.4	6.5	22.3	203.1	172.4
Bessemer	7,577,792	10,147,052	8,894,584	8,475,530	32.6	39.6	53.5	58.7	−25.3	14.1	7.2
Low phosphorus (below 0.4 per cent)	305,738	248,720	192,795		1.3	1.0	1.2		22.9	29.0	
Foundry	4,325,100	5,539,410	3,675,310	3,510,300	18.6	21.6	22.1	24.3	−21.9	50.7	4.7
Malleable	730,910	934,211	316,964	(2)	3.1	3.6	1.9	.....	−21.8	194.7	.....
Forge or mill	488,172	586,685	601,677	1,057,616	2.1	2.3	3.6	7.3	−16.8	−2.5	−43.1
White, mottled, and miscellaneous	32,202	110,810	98,627	208,323	0.1	0.4	0.6	1.4	−70.9	12.4	−52.7
Castings made direct from blast furnace	14,384	16,181	9,469	7,123	0.1	0.1	0.1	(3)	−11.1	70.9	32.9
Ferroalloys:											
Spiegeleisen	81,583	142,223	169,630	163,672	0.4	0.6	1.0	1.1	−42.6	−16.2	3.6
Ferromanganese (45 per cent and over)	104,437	82,208	57,072	51,878	0.4	0.3	0.3	0.4	27.0	44.0	10.0
Ferrosilicon, including Bessemer ferrosilicon (7 per cent and over)	122,367	102,539	53,557	35,910	0.5	0.4	0.3	0.2	40.0	91.5	49.1
Ferrophosphorus and other ferroalloys	21,193				0.1						

[1] A minus sign (−) denotes decrease. [2] Included under other grades—Bessemer, foundry, and white, mottled, and miscellaneous. [3] Less than one-tenth of 1 per cent.

Iron for steel making—basic, Bessemer, low phosphorous and the ferroalloys—aggregated 17,678,963 tons and constituted 76 per cent of the total in 1914; the corresponding proportions being 72 per cent in 1909, 71.7 per cent in 1904, and 66.9 per cent in 1899. The production of spiegeleisen, ferromanganese, ferrosilicon, and other ferroalloys aggregated 329,580 tons in 1914, 326,970 tons in 1909, 280,259 tons in 1904, and 251,460 tons in 1899. These statistics do not include the ferroalloys made in electric furnaces.[1]

Production of pig iron, by method of delivery or casting.—Table 24 gives the pig-iron production according to method of delivery or casting, 1914, 1909, and 1904. More than half the output is now delivered molten, and a fourth is machine cast.

[1] The production of ferro and other alloys in electric furnaces, 1914, was valued at $2,859,482.

Table 24

METHOD OF DELIVERY OR CASTING.	NUMBER OF ESTABLISHMENTS.			PIG-IRON PRODUCTION (TONS).			PER CENT DISTRIBUTION.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
United States	160	208	190	23,269,731	25,651,798	16,623,625	100.0	100.0	100.0
Delivered in molten condition	44	38	25	11,936,791	12,197,686	5,898,744	51.3	47.6	35.5
Machine cast	56	49	37	6,007,417	5,096,797	4,307,108	25.8	19.9	25.9
Sand cast	111	172	165	4,681,867	7,655,568	6,078,844	20.1	29.8	36.6
Chill cast	19	19	8	629,272	685,566	329,460	2.7	2.7	2.0
Castings made direct from furnace	32	15	17	14,384	16,181	9,469	0.1	0.1	0.1
Pennsylvania	52	66	65	9,743,855	10,911,676	7,729,278	100.0	100.0	100.0
Delivered in molten condition	19	18	11	5,712,786	5,887,507	3,579,501	58.6	54.0	46.3
Machine cast	24	23	21	2,696,520	2,837,576	2,376,870	27.7	26.0	30.8
Sand cast	33	50	49	1,112,180	1,907,514	1,490,312	11.4	17.5	19.3
Chill cast	6	7	4	217,756	274,516	279,654	2.2	2.5	3.6
Castings made direct from furnace	14	5	8	4,613	4,563	2,941	(1)	(1)	(1)

[1] Less than one-tenth of 1 per cent.

Table 24—Con.

METHOD OF DELIVERY OR CASTING.	NUMBER OF ESTABLISHMENTS.			PIG-IRON PRODUCTION (TONS).			PER CENT DISTRIBUTION.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Ohio	33	40	33	5,279,045	5,446,971	2,987,787	100.0	100.0	100.0
Delivered in molten condition	11	9	7	2,797,254	2,723,700	1,105,159	53.0	50.0	37.0
Machine cast	16	12	7	1,635,242	945,036	516,338	31.0	17.3	17.3
Sand cast	21	33	30	636,639	1,625,073	1,361,161	12.0	29.8	45.6
Chill cast	5	3	....	206,012	152,824	.....	3.9	2.8	.....
Castings made direct from furnace	5	1	5	3,898	338	5,129	0.1	(1)	0.2
All other states	75	102	92	8,246,831	9,293,151	5,906,560	100.0	100.0	100.0
Delivered in molten condition	14	11	7	3,426,751	3,586,479	1,214,084	41.5	38.6	20.6
Machine cast	16	14	9	1,675,655	1,314,185	1,413,900	20.3	14.1	23.9
Sand cast	57	89	86	2,933,048	4,122,981	3,227,371	35.6	44.4	54.6
Chill cast	8	9	4	205,504	258,226	49,806	2.5	2.8	0.8
Castings made direct from furnace	13	9	4	5,873	11,280	1,399	0.1	0.1	(1)

[1] Less than one-tenth of 1 per cent.

Furnaces—Number and capacity.—In Table 19 there has been given the number of completed furnaces in active establishments at the end of the census years, 1914, 1909, 1904, and 1899, in connection with pig-iron production by states. The increase in the size of furnaces is shown by the fact that although the number of active furnaces increased, 1899–1914, but 3.2 per cent, the pig-iron output increased 61 per cent, notwithstanding the industrial depression of 1914. Table 25 gives, by states, for 1914, 1909, and 1904, the number and daily capacity of the furnaces in active establishments, distributed according to fuel used. This table does not include one electric-charcoal furnace. In 1899 there were 343 furnaces with an aggregate daily capacity of 54,433 tons, and in 1889, 473 of 39,411 tons daily capacity.

Table 25

STATE, AND KIND OF FUEL USED.	COMPLETED BLAST FURNACES (ACTIVE ESTABLISHMENTS).					
	Number.			Daily capacity—tons.		
	1914	1909	1904	1914	1909	1904
United States	[1]352	388	343	[1]109,411	101,447	77,816
Coke, and mixed bituminous coal and coke	315	332	260	107,348	97,426	69,953
Anthracite, and mixed anthracite and coke	8	25	48	617	2,545	6,127
Charcoal, and mixed charcoal and coke	29	31	35	1,446	1,476	1,736
Alabama	36	40	38	8,356	8,370	6,385
Coke	33	37	35	8,146	8,190	6,205
Charcoal	3	3	3	210	180	180
Colorado—coke	6	6	5	1,800	1,800	1,450
Connecticut—charcoal	3	3	3	48	48	48
Georgia	.....	2	4	.....	130	300
Coke	.....	1	1	.....	70	150
Charcoal	.....	1	3	.....	60	150
Illinois—coke	24	23	21	10,254	7,775	6,552
Indiana—coke	10	7	.....	4,500	3,050	.....
Kentucky	3	6	3	470	710	180
Coke	3	5	3	470	700	180
Charcoal	.....	1	.....	.....	10	.....
Maryland	5	5	5	1,815	1,415	1,415
Coke	4	4	4	1,800	1,400	1,400
Charcoal	1	1	1	15	15	15
Massachusetts—charcoal and mixed charcoal and coke	2	2	2	28	30	30
Michigan	13	12	11	1,565	1,208	1,137
Coke	3	2	1	675	321	250
Charcoal and mixed charcoal and coke	10	10	10	890	887	887
Minnesota—coke	1	1	1	250	225	225
Missouri	1	2	2	60	208	208
Coke	.....	1	1	.....	150	150
Charcoal	1	1	1	60	58	58
New Jersey	2	6	8	357	1,440	1,492
Coke	2	5	3	357	1,290	1,000
Anthracite and coke	.....	1	5	.....	150	492
New York	21	18	15	7,135	6,508	3,931
Coke	21	18	11	7,135	6,508	3,475
Anthracite and coke	.....	.....	2	.....	.....	303
Charcoal	.....	.....	2	.....	.....	153
Ohio	61	67	53	21,524	21,017	15,897
Coke	57	66	51	21,190	21,008	15,865
Mixed bituminous coal and coke	3			325		
Charcoal	1	1	2	9	9	32
Pennsylvania	137	145	131	46,934	41,707	33,247
Coke	124	117	86	45,896	39,294	27,891
Mixed bituminous coal and coke	1			400		
Anthracite and mixed anthracite and coke	8	24	41	617	2,395	5,332
Charcoal	4	4	4	21	18	24
Tennessee	6	15	19	620	1,569	1,939
Coke	5	13	17	605	1,545	1,915
Charcoal and coke mixed	1	2	2	15	24	24
Texas—coke	.....	1	.....	.....	70	.....
Virginia	11	17	13	1,486	1,982	1,335
Coke	10	16	12	1,466	1,970	1,335
Charcoal	1	1	1	20	12	10
West Virginia—coke	3	4	4	899	1,125	1,125
Wisconsin	7	6	5	1,310	1,060	860
Coke	5	5	4	1,180	935	735
Charcoal	2	1	1	130	125	125

[1] Not including one electric-charcoal furnace in California of 15 tons daily capacity.

Of the 352 completed blast furnaces at the end of the year 1914 in active establishments, not including furnaces rebuilding, some were not in operation during the year. There were 285 furnaces active at some time during the year 1914, and 370 in 1909. Seventy furnaces in active establishments were idle during the entire year in 1914, and 24 in 1909; 8 furnaces were being rebuilt at the end of the year 1914, and the same number in 1909. During the intervening period, 1909–1914, 12 furnaces of 1,865 tons capacity were abandoned or dismantled, and 30 new stacks had been constructed, comprising 29 coke furnaces of 11,897 tons capacity, and 1 charcoal furnace of 5 tons.

In this connection the smelting capacity of all furnaces is of interest. Table 26 gives the statistics, by states, for all blast furnaces, including those in idle establishments, on December 31, 1914.[1] At the close of the year there were 451 completed furnaces with an annual capacity of 44,405,000 tons and 5 furnaces building of 860,000 tons annual capacity. The pig-iron production in 1914 indicates that the furnaces of the country were utilized to the extent of a little over 50 per cent of their aggregate capacity.

[1] Statistical report of the American Iron and Steel Institute, 1915.

Table 26

STATE.	BLAST FURNACES: 1914.							
	Number.				Annual capacity (gross tons).			
	Total.	Coke.[1]	Anthracite.[2]	Charcoal.	Total.	Coke.[1]	Anthracite.[2]	Charcoal.
COMPLETED FURNACES.								
United States	451	389	20	42	44,405,000	43,046,500	710,200	648,300
Alabama	48	44	....	4	3,660,000	3,580,000	.....	80,000
Colorado	6	6	....	.....	730,000	730,000	.....	.....
Connecticut	3	.....	....	3	15,000	.....	.....	15,000
Georgia	4	2	....	2	129,500	96,000	.....	33,500
Kentucky	6	5	....	1	314,250	311,250	.....	3,000
Illinois	26	26	....	....	3,674,800	3,674,800	.....	.....
Indiana	10	10	....	....	1,631,200	1,631,200	.....	.....

[1] Includes 7 furnaces (Illinois, 2; Ohio, 3; and Pennsylvania, 2) which use bituminous coal and coke mixed.
[2] Includes furnaces which use anthracite alone and anthracite and coke mixed.

Table 26—Con.

STATE.	BLAST FURNACES: 1914. Number. Total.	Coke.	Anthracite.	Charcoal.	Annual capacity (gross tons). Total.	Coke.	Anthracite.	Charcoal.
COMPLETED FURNACES—contd.								
Massachusetts	2	....	....	2	10,000	.....	.....	10,000
Maryland	5	4	....	1	662,000	657,000	.....	5,000
Minnesota	1	1	....	....	82,000	82,000	.....	.....
Michigan	14	3	....	11	593,800	250,000	.....	343,800
Mississippi	1	....	....	1	3,500	.....	.....	3,500
Missouri	2	1	....	1	65,000	45,000	.....	20,000
New Jersey	6	5	....	1	430,300	430,000	.....	300
New York	27	23	3	1	2,938,000	2,810,000	123,000	5,000
Ohio	74	73	....	1	8,828,000	8,825,000	.....	3,000
Oregon	1	....	....	1	15,000	.....	.....	15,000
Pennsylvania	159	136	17	6	17,858,000	17,256,200	587,200	14,600
Tennessee	18	17	....	1	781,650	777,650	.....	4,000
Texas	3	2	....	1	76,000	61,000	.....	15,000
Virginia	22	20	....	2	1,018,000	989,000	.....	29,000
Washington	1	1	....	....	24,000	24,000	.....	.....
West Virginia	4	4	....	....	408,000	408,000	.....	.....
Wisconsin	8	6	....	2	457,000	408,400	.....	48,600
FURNACES BUILDING.								
United States	5	5	....	....	860,000	860,000	.....	.....
Minnesota	2	2	....	....	325,000	325,000	.....	.....
Ohio	2	2	....	....	360,000	360,000	.....	.....
Pennsylvania	1	1	....	....	175,000	175,000	.....	.....

Table 27 shows the distribution of the furnaces, according to size, in active establishments, 1914, 1909, and 1904.

Table 27

STATE.	Census year.	All furnaces.	BLAST FURNACES HAVING DAILY CAPACITY OF— Less than 100 tons.	100 to 199 tons.	200 to 299 tons.	300 to 399 tons.	400 to 499 tons.	500 tons and over.
United States: Number	1914	[1] 353	[1] 37	56	57	59	79	65
	1909	388	57	82	77	81	62	29
	1904	343	69	95	66	59	31	23
Daily capacity, tons.	1914	[1] 109,426	[1] 1,712	7,967	13,206	19,208	34,808	32,525
	1909	101,447	3,006	11,769	17,838	26,568	26,841	15,425
	1904	77,816	3,627	13,586	15,357	19,556	13,590	12,100
Alabama	1914	36	4	8	13	11	.....	.....
	1909	40	5	7	20	8	.....	.....
	1904	38	3	24	11	.....	.....	.....
Colorado	1914	6	.....	.....	2	4	.....	.....
	1909	6	.....	.....	2	4	.....	.....
	1904	5	.....	.....	2	3	.....	.....
Illinois	1914	24	.....	.....	2	5	10	7
	1909	23	.....	.....	5	13	2	3
	1904	21	.....	2	5	12	.....	2
Indiana	1914	10	.....	.....	.....	.....	10	.....
	1909	7	.....	.....	.....	1	6	.....
	1904	.....	.....	.....	.....	.....	.....	.....
Kentucky	1914	3	.....	2	1	.....	.....	.....
	1909	6	2	3	1	.....	.....	.....
	1904	3	3	.....	.....	.....	.....	.....
Maryland	1914	5	1	.....	.....	.....	3	1
	1909	5	1	.....	.....	4	.....	.....
	1904	5	1	.....	.....	4	.....	.....
Michigan	1914	13	7	4	.....	2	.....	.....
	1909	12	8	3	1	.....	.....	.....
	1904	11	6	4	1	.....	.....	.....
New Jersey	1914	2	.....	1	1	.....	.....	.....
	1909	6	.....	3	1	.....	2	.....
	1904	8	2	3	1	.....	2	.....
New York	1914	21	.....	1	6	8	1	5
	1909	18	.....	1	4	8	1	4
	1904	15	1	3	4	6	.....	1
Ohio	1914	61	1	9	7	12	20	12
	1909	67	4	11	12	13	20	7
	1904	53	6	6	13	11	10	7
Pennsylvania	1914	137	10	21	17	15	34	40
	1909	145	16	32	23	29	30	15
	1904	131	27	26	25	22	18	13

[1] Includes one electric furnace in California of 15 tons daily capacity.

Table 27—Contd.

STATE.	Census year.	All furnaces.	BLAST FURNACES HAVING DAILY CAPACITY OF— Less than 100 tons.	100 to 199 tons.	200 to 299 tons.	300 to 399 tons.	400 to 499 tons.	500 tons and over.
Tennessee	1914	6	3	1	2	.....	.....	.....
	1909	15	5	9	1	.....	.....	.....
	1904	19	6	13	.....	.....	.....	.....
Virginia	1914	11	3	6	2	.....	.....	.....
	1909	17	6	9	2	.....	.....	.....
	1904	13	5	8	.....	.....	.....	.....
West Virginia	1914	3	.....	.....	2	.....	1	.....
	1909	4	.....	.....	2	1	1	.....
	1904	4	.....	.....	2	1	1	.....
Wisconsin	1914	7	1	3	1	2	.....	.....
	1909	6	1	3	2	.....	.....	.....
	1904	5	.....	4	1	.....	.....	.....
All other states	1914	8	7	.....	1	.....	.....	.....
	1909	11	9	1	1	.....	.....	.....
	1904	12	9	2	1	.....	.....	.....

Maximum production per furnace.—The record for the maximum production per furnace for a day, a week, and a month, as reported at the census of 1909, stands unbroken, viz, the production of 918 tons of pig iron by the Edgar Thompson furnace "K" March 30, 1905; 5,315 tons by the Duquesne furnace No. 1 for a week in March, 1906; and 21,272 tons by the Edgar Thompson furnace "K" in March, 1905. The maximum production since 1909 was made, for a day, by furnace No. 1 of the Illinois Steel Co. April 13, 1910, 785 tons; for a week by furnace No. 1 of the Pittsburg Steel Co. in December, 1914, 5,005 tons; and for a month by the last-named furnace in December, 1914, 20,746 tons.

The record for the longest run on a single lining is held by the Shoenberger furnace No. 2, from March, 1897, to August, 1906, 3,431 days. The furnace was banked 11 times and 69 days lost in banking. The average daily output was 197 tons of pig iron and the total production during the period 633,208 tons. The longest run terminating since the census of 1909 was made by one of the Eliza furnaces of the Jones & Laughlin Steel Co., from April 2, 1904, to January 11, 1913—3,172 days. The furnace was banked but once for 26 days during this period. The average daily output was 427 tons and the total production during this period 1,353,625 tons. This is the largest production by a furnace on a single lining. Prior thereto the record was held by the Duquesne furnace No. 1, which produced 1,287,381 tons in a run of 2,689 days from 1896 to 1903. Table 28 presents the statistics in regard to duration of runs, classified according to time groups and according to size of furnace as indicated by height.

The table covers all furnaces reporting length of runs and the last three runs when reported—287 furnaces and 664 runs in the aggregate. The groups covering 1,500 days and over represent, approximately, runs of 4 or more years duration, and embrace 80 runs of which 60 were by 80-foot or larger furnaces, and of these 39 were by 90-foot furnaces.

Table 28

DURATION OF RUNS.	BLAST FURNACES. Total.	Furnaces grouped according to height. Less than 60 feet.	60 to 69 feet.	70 to 79 feet.	80 to 89 feet.	90 feet and over.
Number of furnaces reporting length of runs	287	7	27	61	103	89
Number of runs (last 3 runs when reported)[1]	664	16	59	152	234	203
Average length, days	837	415	728	738	782	1,041
Furnaces classified according to time groups:						
Less than 500 days—						
Number of runs	201	11	23	54	77	36
Average length, days	300	216	255	310	306	325
500 to 1,000 days—						
Number of runs	260	4	22	67	95	72
Average length, days	728	627	704	709	738	748
1,000 to 1,500 days—						
Number of runs	123	.....	9	17	41	56
Average length, days	1,215	.....	1,227	1,230	1,197	1,222
1,500 to 2,000 days—						
Number of runs	52	1	3	9	15	24
Average length, days	1,712	1,764	1,756	1,690	1,691	1,726
2,000 to 2,500 days—						
Number of runs	19	.....	1	3	4	11
Average length, days	2,206	.....	2,025	2,124	2,214	2,242
2,500 days and over—						
Number of runs	9	.....	1	2	2	4
Average length, days	2,882	.....	3,284	2,760	2,981	2,793

[1] In some cases only one or two completed runs.

Pig-iron casting machines.—The use of 112 pig-iron casting machines was reported by 59 establishments in 1914 and 104 by 53 establishments in 1909, chiefly of the Heyl and Patterson, and Uehling types. As before stated 6,007,417 tons of pig iron in 1914 and 5,096,797 tons in 1909 were machine cast.

Slag pits.—Slag pits were reported by 49 establishments in 1914, these establishments reporting 85 pits, serving 101 blast furnaces.

Materials, products, and equipment in detail, by states.—Detail statistics of materials, products, and equipment, by states, are given in Table 29 for 1914.

BLAST FURNACES—DETAIL STATISTICS OF NUMBER OF ESTABLISHMENTS MATERIALS, PRODUCTS, AND EQUIPMENT, BY STATES: 1914.

[Tons of 2,240 pounds.]

Table 29	United States.	Alabama.	Illinois.	Michigan.	New York.	Ohio.	Pennsylvania.	Tennessee.	Virginia.	Wisconsin.	All other states.[1]
Number of establishments	160	15	5	12	8	33	52	6	8	5	16
MATERIALS USED.											
Total cost	$264,580,060	$13,890,993	$21,794,147	$3,876,579	$16,287,152	$60,738,524	$115,501,389	$1,681,935	$3,281,996	$3,251,810	$24,275,535
Iron ore:											
Tons	43,326,817	4,567,776	3,338,160	690,317	2,667,090	9,624,750	17,100,710	348,856	588,555	507,600	3,893,003
Cost	$150,855,740	$5,729,189	$11,874,418	$2,064,243	$8,421,885	$36,348,602	$70,371,527	$643,175	$1,572,929	$1,412,364	$12,417,408
Domestic—											
Tons	41,556,642	4,548,084	3,301,571	690,317	2,667,090	9,609,473	15,777,624	348,856	552,989	507,600	3,553,038
Cost	$141,276,713	$5,471,521	$11,321,444	$2,064,243	$8,421,885	$36,289,022	$63,044,018	$643,175	$1,471,610	$1,412,364	$11,137,431
Foreign—											
Tons	1,770,175	19,692	36,589	.....	.....	15,277	1,323,086	.....	35,566	.....	339,965
Cost	$9,579,027	$257,668	$552,974	.....	.....	$59,580	$7,327,509	.....	$101,319	.....	$1,279,977
Mill cinder, scale, scrap, slag, etc.:											
Tons	2,168,092	114,848	145,002	257	35,870	353,518	1,283,909	16,588	15,968	13,591	188,541
Cost	$6,651,055	$358,436	$378,816	$825	$70,449	$806,739	$4,501,847	$53,133	$49,829	$29,337	$401,644
Fluxes:											
Tons	11,499,685	505,998	795,980	102,567	735,623	2,752,381	5,055,105	100,260	248,998	134,549	1,068,224
Cost	$11,184,378	$328,155	$684,018	$83,563	$637,615	$2,796,342	$5,078,963	$130,711	$176,633	$150,988	$1,117,390
Fuel for smelting, cost	$85,436,530	$6,358,217	$7,711,367	$1,513,281	$6,525,151	$18,852,678	$32,176,007	$794,415	$1,289,516	$1,388,355	$8,827,543
Coke—											
Tons (net tons 2,000 pounds)	26,883,082	2,747,579	1,934,945	190,204	1,718,350	5,816,260	11,214,838	235,160	478,026	212,258	2,335,462
Cost	$83,499,448	$6,039,288	$7,705,184	$621,393	$6,525,151	$18,750,140	$31,963,795	$769,978	$1,231,384	$1,317,435	$8,575,700
Coal—											
Tons	[2] 92,746	.....	2,674	.....	.....	45,251	44,821	.....	.....	.....	.....
Cost	[2] $254,007	.....	$6,183	.....	.....	$78,458	$169,366	.....	.....	.....	.....
Charcoal—											
Bushels	29,083,978	3,552,097	.....	18,816,032	.....	344,000	499,970	323,221	700,006	1,258,515	3,590,137
Cost	$1,683,075	$318,929	.....	$891,888	.....	$24,080	$42,846	$24,437	$58,132	$70,920	$251,843
All other materials, cost	$10,452,357	$1,116,996	$1,145,528	$214,667	$632,052	$1,934,163	$3,373,045	$60,501	$193,089	$270,766	$1,511,550
PRODUCTS.											
Total value	$317,653,983	$20,065,739	$25,861,528	$5,450,063	$18,485,638	$72,969,368	$135,806,067	$2,245,329	$3,772,382	$3,793,442	$29,204,427
Pig iron:											
Tons	23,269,731	1,835,576	1,843,333	361,076	1,406,455	5,279,045	9,743,855	158,751	293,077	269,650	2,078,913
Value	$312,761,617	$19,909,045	$25,360,306	$4,931,811	$18,175,036	$71,686,701	$134,465,078	$2,244,015	$3,753,082	$3,712,223	$28,524,320
For consumption in works of company producing—											
Tons	15,495,004	490,303	1,453,860	.....	[3]	3,877,188	7,557,352	.....	.....	[3]	1,685,240
Assigned value	$209,263,405	$5,385,536	$20,226,896	.....	[3]	$52,409,007	$103,078,840	.....	.....	[3]	$23,129,498
For sale—											
Tons	7,774,727	1,345,273	389,473	361,076	[3]	1,401,857	2,186,503	158,751	293,077	[3]	393,673
Value	$103,498,212	$14,523,509	$5,133,410	$4,931,811	[3]	$19,217,694	$31,386,238	$2,244,015	$3,753,082	[3]	$5,394,822
All other products, value	$4,892,366	$156,694	$501,222	$518,252	$310,602	$1,282,667	$1,340,989	$1,314	$19,300	$81,219	$680,107

[1] All other states embrace: California, 1 establishment (electric furnace); Colorado, 1; Connecticut, 1; Indiana, 2; Kentucky, 2; Maryland, 2; Massachusetts, 1; Minnesota, 1; Missouri, 1; New Jersey, 2; and West Virginia, 2.

[2] Includes 38,874 tons of anthracite, costing $158,377, and 53,872 tons (60,337 short tons) of bituminous, costing $95,630.

[3] Included in totals but amount not shown to avoid disclosure of individual operations.

BLAST FURNACES—DETAIL STATISTICS OF NUMBER OF ESTABLISHMENTS, MATERIALS, PRODUCTS, AND EQUIPMENT, BY STATES: 1914—Continued.

Table 29—Continued.	United States.	Alabama.	Illinois.	Michigan.	New York.	Ohio.	Pennsylvania.	Tennessee.	Virginia.	Wisconsin.	All other states.
PRODUCTS—continued.											
Pig iron classified according to fuel used:											
Coke—											
Tons	22,787,890	1,806,821	1,816,772	(1)	1,406,455	5,219,564	9,618,739	156,677	289,698	(1)	2,049,951
For consumption	15,436,921	490,303	1,430,692		(1)	3,877,188	7,523,604			(1)	1,684,073
For sale	7,350,969	1,316,518	386,080	(1)	(1)	1,342,376	2,095,135	156,677	289,698	(1)	365,878
Value	$304,356,130	$19,249,205	$24,995,092	$2,255,269	$18,175,036	$70,759,573	$131,639,925	$2,177,865	$3,662,055	$3,528,207	$27,913,893
Bituminous coal and coke—											
Tons	[2] 118,632		(1)			(1)	(1)				
Value	$2,704,134		(1)			(1)	(1)				
Anthracite coal and coke—											
Tons (for sale)	87,919						87,919				
Value	$1,256,663						$1,256,663				
Charcoal— [3]											
Tons	[4] 275,290	(1)		194,761		(1)	3,449	(1)	(1)	(1)	28,962
Value	$4,444,690	(1)		$2,676,542		(1)	$117,326	(1)	(1)	(1)	$610,427
Pig iron classified by grades (tons), total	23,269,731	1,835,576	1,843,333	361,076	1,406,455	5,279,045	9,743,855	158,751	293,077	269,650	2,078,913
Bessemer (0.04 to 0.10 per cent phosphorus)	7,577,792		1,024,181		(1)	2,880,759	3,078,581			(1)	386,608
For consumption	7,092,656		(1)		(1)	2,862,647	2,710,221				(1)
For sale	485,136		(1)			18,112	368,360			(1)	(1)
Low phosphorus (below 0.04 per cent)	305,738				(1)		224,243	(1)			
For consumption	38,191						38,191				
For sale	267,547				(1)		186,052	(1)			
Basic	9,465,853	543,152	503,871	41,188	332,507	1,516,905	5,053,942				1,474,288
For consumption	7,756,032	411,358	425,262		225,694	973,344	4,408,558				1,311,816
For sale	1,709,821	131,794	78,609	41,188	106,813	543,561	645,384				162,472
Forge or mill	488,172	31,132			382	75,095	362,626	1,329	8,279		9,329
For consumption	332,997	733				37,155	295,109				
For sale	155,175	30,399			382	37,940	67,517	1,329	8,279		9,329
Foundry	4,325,100	1,231,706	145,499	286,755	629,459	541,354	782,100	118,735	284,546	209,311	101,635
For consumption	127,270	67,981			926	185	10,260			5,788	42,130
For sale	4,197,830	1,163,725	145,499	286,755	628,533	541,169	771,840	118,735	284,546	197,523	59,505
Malleable	730,910		135,551	33,109	196,462	194,606	63,236			48,098	59,848
For consumption	5,192				2,072					3,120	
For sale	725,718		135,551	33,109	194,390	194,606	63,236			44,978	59,848
White, mottled, and miscellaneous	32,202	17,229			1,145	650	9,949		252	2,977	
For consumption	10,589	58			1,040		9,491				
For sale	21,613	17,171			105	650	458		252	2,977	
Castings made direct from blast furnace	14,384	2,860	274	24		3,898	4,613	2,074		11	630
Ferroalloys	329,580	9,497	33,957		(1)	65,778	164,565	(1)			46,575
For consumption	120,397	7,392	27,913				81,390				3,702
For sale	209,183	2,105	6,044		(1)	65,778	83,175	(1)			42,873
Spiegeleisen	81,583	(1)	(1)				68,350				(1)
Ferromanganese	104,437	(1)	(1)				(1)				(1)
Ferrosilicon, including Bessemer ferrosilicon (7 per cent and over in silicon)	122,367		(1)			65,778	(1)	(1)			(1)
Ferrophosphorus and all other	21,193				(1)		(1)	(1)			
Pig iron classified by method of delivery or casting, total tons	23,269,731	1,835,576	1,843,333	361,076	1,406,455	5,279,045	9,743,855	158,751	293,077	269,650	2,078,913
Delivered in molten condition to steel works, etc.	11,936,791	405,072	1,227,933		468,767	2,797,254	5,712,786				1,324,979
Sand cast	4,681,867	1,087,160	14,497	234,970	659,378	636,639	1,112,180	148,061	281,784	200,809	306,389
Machine cast	6,007,417	272,301	600,629	126,082	240,144	1,635,242	2,696,520			68,530	367,669
Chill cast	629,272	68,183			38,166	206,012	217,756	8,616	11,293		79,246
Castings made direct from blast furnace	14,384	2,860	274	24		3,898	4,613	2,074		11	630
EQUIPMENT.											
Furnaces in active establishments:											
Completed furnaces at end of year (not including furnaces rebuilding)—											
Number	353	36	24	13	21	61	137	6	11	7	37
Daily capacity, tons	109,426	8,356	10,254	1,565	7,135	21,524	45,934	620	1,486	1,310	10,242
Active during the year—											
Number	286	27	17	13	16	59	108	6	9	6	25
Daily capacity, tons	90,172	6,715	7,351	1,565	5,385	21,096	38,194	520	1,066	1,145	7,115
Coke furnaces—											
Number	252	25	17	3	16	55	99	5	8	4	20
Daily capacity, tons	87,846	6,595	7,351	675	5,385	20,762	37,501	505	1,066	1,015	6,991
Bituminous coal and coke mixed furnaces—											
Number	4					3	1				
Daily capacity, tons	725					325	400				
Anthracite coal and coke mixed furnaces—											
Number	4						4				
Daily capacity, tons	272						272				
Charcoal furnaces—											
Number	[5] 26	2		10		1	4	1	1	2	5
Daily capacity, tons	[5] 1,329	120		890		9	21	15	20	130	124

[1] Included in totals but amount not shown to avoid disclosure of individual operations.
[2] Includes 56,916 tons for consumption; considerable spiegeleisen and ferromanganese was made with bituminous coal and coke.
[3] Includes a small quantity made with charcoal and electricity.
[4] Includes 1,167 tons for consumption.
[5] Includes 1 charcoal and coke, 14 tons, Massachusetts; and 1 charcoal and electricity, 15 tons, California.

BLAST FURNACES—DETAIL STATISTICS OF NUMBER OF ESTABLISHMENTS, MATERIALS, PRODUCTS, AND EQUIPMENT, BY STATES: 1914—Continued.

Table 29—Continued.	United States.	Alabama.	Illinois.	Michigan.	New York.	Ohio.	Pennsylvania.	Tennessee.	Virginia.	Wisconsin.	All other states.
EQUIPMENT—continued.											
Furnaces in active establishments—Continued.											
Idle during the entire year—											
Number	70	9	7	.....	5	4	29	1	2	1	12
Daily capacity, tons	20,004	1,641	2,903	.....	1,750	1,078	8,740	200	400	165	3,127
Coke furnaces—											
Number	62	8	7	.....	5	4	25	1	2	1	9
Daily capacity, tons	19,547	1,571	2,903	.....	1,750	1,078	8,395	200	400	165	3,085
Anthracite coal and anthracite and coke furnaces—											
Number	4	.....	.....	.....	.....	.....	4	.....	.....	.....	.....
Daily capacity, tons	345	.....	.....	.....	.....	.....	345	.....	.....	.....	.....
Charcoal furnaces—											
Number	4	1	.....	.....	.....	.....	.....	.....	.....	.....	3
Daily capacity, tons	112	70	.....	.....	.....	.....	.....	.....	.....	.....	42
New furnaces completed since 1909—											
Number	[1] 30	1	2	.....	3	8	14	.....	1	.....	1
Daily capacity, tons	[1] 11,902	342	800	.....	1,100	3,155	5,880	.....	125	.....	500
In course of construction at end of year—											
Number	2	.....	.....	.....	.....	1	1	.....	.....	.....	.....
Daily capacity, tons	850	.....	.....	.....	.....	350	500	.....	.....	.....	.....
Rebuilding at end of year—											
Number (coke furnaces)	[2] 8	.....	1	.....	1	[2] 2	3	[2] 1	.....	.....	.....
Daily capacity, tons	2,650	.....	500	.....	300	775	975	100	.....	.....	.....
Abandoned or dismantled since 1909—											
Number	[3] 12	2	.....	1	.....	4	5	.....	.....	.....	.....
Daily capacity, tons	1,865	300	.....	60	.....	745	760	.....	.....	.....	.....
Pig-casting machines	112	4	11	1	8	21	54	.....	.....	1	12
Granulated slag pits:											
Number	85	3	4	.....	5	25	40	1	.....	1	6
Number of blast furnaces served	101	3	12	.....	5	25	43	1	.....	3	9
Gas engines using blast-furnace gas, number	144	.....	13	.....	24	16	40	3	.....	1	47
In blast-furnace department	73	.....	6	.....	16	6	22	3	.....	.....	20
In rolling-mill and other departments and for electric generation	71	.....	7	.....	8	10	18	.....	.....	1	27
Horsepower	380,820	.....	45,600	.....	40,000	43,500	93,400	750	.....	670	156,900

[1] Includes 29 coke, of 11,897 tons; 1 charcoal (Pennsylvania), of 5 tons.
[2] Active during the year but rebuilding at end of year: Ohio, 1; Tennessee, 1.
[3] Includes 8 coke, 3 mixed coal and coke, and 1 charcoal.

DETAIL STATE TABLES.

The principal facts derived from the census inquiry concerning the blast-furnace industry, other than those relating to specific materials, products, and equipment, are presented in the two general tables. Table 30 shows, for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products, as reported for the blast-furnace industry. Table 31 presents, for 1914, by states, the more detailed statistics of the industry.

TABLE 30.—BLAST FURNACES—COMPARATIVE SUMMARY, BY STATES, FOR 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Materials.	Value of products.
					Expressed in thousands.		
United States	1914	160	29,356	1,222,273	$22,781	$264,580	$317,654
	1909	208	38,429	1,173,422	24,607	320,638	391,429
	1904	190	35,078	773,278	18,935	178,942	231,823
Alabama	1914	15	3,547	126,573	1,985	13,891	20,066
	1909	19	3,783	106,189	2,077	15,477	21,236
	1904	19	4,954	101,048	1,939	11,012	16,646
Illinois	1914	5	1,450	94,160	1,348	21,794	25,862
	1909	6	2,493	70,453	1,793	30,908	38,300
	1904	4	1,910	45,487	1,398	19,005	27,331
Michigan	1914	12	991	14,045	782	3,877	5,450
	1909	11	1,016	17,403	632	4,224	5,824
	1904	11	1,139	7,491	588	3,104	4,644
New York	1914	8	1,832	97,749	1,325	16,287	18,486
	1909	9	2,298	95,416	1,758	20,917	26,621
	1904	9	1,559	39,080	1,161	6,374	8,635
Ohio	1914	33	5,786	232,179	5,171	60,739	72,969
	1909	40	7,295	215,739	5,090	68,425	83,699
	1904	33	5,434	167,740	3,471	32,477	40,862
Pennsylvania	1914	52	11,518	477,588	$9,337	$115,501	$135,806
	1909	66	14,521	476,680	9,457	142,074	168,578
	1904	65	13,867	304,154	7,764	86,322	107,455
Tennessee	1914	6	503	6,580	233	1,682	2,245
	1909	13	1,143	18,150	519	3,381	4,653
	1904	13	1,358	21,011	546	2,609	3,428
Virginia	1914	8	689	15,210	352	3,282	3,772
	1909	14	1,320	17,320	546	4,418	5,389
	1904	10	1,081	12,465	346	2,717	3,343
Wisconsin	1914	5	482	12,742	398	3,252	3,793
	1909	5	758	12,975	497	3,918	4,794
	1904	4	482	5,875	257	2,251	3,075
All other states	1914	16	2,558	145,447	1,850	24,275	29,205
	1909	25	3,802	143,097	2,238	26,896	32,335
	1904	22	3,294	68,927	1,465	13,071	16,404

TABLE 31.—BLAST FURNACES—DETAIL STATEMENT, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc. Male.	Clerks, etc. Female.	Wage earners. Average number.	Wage earners. Number, 15th day of— Maximum month.	Wage earners. Number, 15th day of— Minimum month.	WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY. Total.	16 and over. Male.	16 and over. Female	Under 16. Male	Under 16. Female	Capital.	EXPENSES. Salaries and wages. Officials.	Salaries and wages. Clerks, etc.
United States	160	33,194	15	753	2,698	372	29,356	Ap 32,851	No 23,329	29,660	29,601	6	53	.....	$462,281,594	$2,631,420	$3,483,157
Alabama	15	3,870	.....	62	242	19	3,547	Mh 3,830	No 3,063	4,008	3,969	.....	39	.....	26,742,459	187,558	231,743
Illinois	5	1,653	.....	57	117	29	1,450	Ma 1,744	No 886	1,041	1,041	.....	.....	.....	51,695,551	182,672	153,174
Michigan	12	1,073	.....	31	35	16	991	Fe 1,193	No 745	966	966	.....	.....	.....	9,802,954	116,018	41,851
New York	8	2,086	.....	51	183	20	1,832	Ma 1,996	No 1,479	1,860	1,860	.....	.....	.....	34,912,875	255,110	250,026
Ohio	33	6,625	.....	152	609	78	5,786	Ap 6,630	No 4,456	6,385	6,384	1	.....	.....	95,470,294	558,265	850,530
Pennsylvania	52	13,205	14	285	1,210	178	11,518	Ap 13,230	No 9,417	10,988	10,981	4	3	.....	180,585,390	918,857	1,599,397
Tennessee	6	571	1	23	42	2	503	Ju 639	De 396	647	638	.....	9	.....	3,936,893	49,447	27,345
Virginia	8	743	.....	24	30	.....	689	Mh 844	No 371	720	718	.....	2	.....	4,250,239	57,136	25,813
Wisconsin	5	554	.....	11	58	3	482	Mh 702	De 266	408	408	.....	.....	.....	7,524,758	60,264	42,087
All other states [1]	16	2,814	.....	57	172	27	2,558	.....	.....	2,637	2,636	1	.....	.....	47,360,031	246,063	261,191

STATE.	EXPENSES—continued. Salaries and wages—Continued. Wage earners.	For contract work.	Rent and taxes. Rent of factory.	Rent and taxes. Taxes, including internal revenue and corporation income.	For materials. Principal materials.	For materials. Fuel and rent of power.	Value of products.	Value added by manufacture.	POWER. Primary horsepower. Total.	Steam engines.[2]	Internal-combustion engines.[2]	Water wheels and motors.[2]	Electric (rented.)	Electric horsepower generated in establishments reporting.
United States	$22,780,626	$265,108	$493,781	$2,443,736	$175,993,468	$88,586,592	$317,653,983	$53,073,923	1,222,273	1,005,374	194,037	1,261	21,601	190,981
Alabama	1,984,903	180	.....	149,310	7,210,069	6,680,924	20,065,739	6,174,746	126,573	120,573	.....	.....	6,000	7,972
Illinois	1,348,268	.....	.....	208,889	13,656,576	8,137,571	25,861,528	4,067,381	94,160	84,160	10,000	.....	.....	24,929
Michigan	781,852	.....	.....	121,186	2,330,237	1,546,342	5,450,063	1,573,484	14,045	13,405	.....	640	.....	3,090
New York	1,324,737	.....	59,950	158,536	9,605,918	6,681,234	18,485,638	2,198,486	97,749	54,130	34,320	.....	9,299	7,488
Ohio	5,170,730	40,900	15,000	743,629	41,379,764	19,358,760	72,969,368	12,230,844	232,179	196,256	32,725	150	3,048	38,872
Pennsylvania	9,337,086	223,043	418,731	760,124	82,537,986	32,963,403	135,806,067	20,304,678	477,588	414,815	60,605	366	1,802	74,495
Tennessee	292,912	985	.....	14,227	856,942	824,993	2,245,329	563,894	6,580	6,580	.....	.....	.....	47
Virginia	352,434	.....	.....	27,980	1,918,447	1,363,549	3,772,382	490,386	15,210	15,210	.....	.....	.....	465
Wisconsin	398,374	.....	100	76,558	1,799,720	1,452,090	3,793,442	541,632	12,742	10,255	2,487	.....	.....	2,206
All other states [1]	1,849,330	.....	.....	183,297	14,697,809	9,577,726	29,204,427	4,928,892	145,447	89,990	53,900	105	1,452	31,417

[1] All other states embrace: California, 1 establishment; Colorado, 1; Connecticut, 1; Indiana, 2; Kentucky, 2; Maryland, 2; Massachusetts, 1; Minnesota, 1; Missouri, 1; New Jersey, 2; West Virginia, 2.
[2] Owned power only.

PART IV.—STEEL WORKS AND ROLLING MILLS.

GENERAL STATISTICS.

Description of the industry.—Under the head of "steel works and rolling mills" there is included all establishments engaged primarily in the conversion of iron into steel, and the hot-rolling of iron and steel, either or both. In addition to the establishments within the classified industry there were in 1914 a few, 13 in number, engaged primarily in other lines of manufacture, but which incidentally manufactured steel or did hot-rolling. Data for these establishments are not included in the present section except as indicated.[1] These 13 establishments were in the following industries: Foundry and machine-shop products, 7; steam-railroad cars, 4; and 1 each in metal furniture and hardware.

In many cases the processes of manufacture are carried beyond the rolling stage, and the statistics as presented show not only the direct or primary rolled products of the mills, whether sold as such or consumed in further processes of manufacture, but also such finished products as were made therefrom in the same establishment, except that the tin-plate dipping departments of rolling mills have been treated separately.

Summary and comparison with earlier censuses.—Table 32 summarizes the statistics for the industry for each census from 1899 to 1914, inclusive. The number of establishments in the industry has not materially varied since 1869, when there were 422; there were 451

[1] The value of the steel castings and rolled steel products of these 13 establishments was $2,831,946, of which $1,771,170 represented that of products for consumption by the producer, and $1,060,776 that of products for sale.

in 1879, 415 in 1889, and the numbers in the later years as given in the table.

In 1869 there were 50,000 wage earners, in 1879 99,000, and in 1889, 137,766; and the value of products in 1869 was $137,568,000, in 1879, $207,242,000, and in 1889, $333,044,000; with $47,540,000 for value added by manufacture in 1869, $74,591,000 in 1879, and $115,870,000 in 1889.

Table 32

	STEEL WORKS AND ROLLING MILLS.				PER CENT OF INCREASE.[1]		
	1914	1909	1904	1899	1909–1914	1904–1909	1899–1904
Number of establishments	427	446	415	445	−4.3	−7.5	−6.7
Persons engaged in the industry	274,162	260,762	221,956	190,825	5.1	17.5	16.3
Proprietors and firm members	52	47	64	122	10.6	−26.6	−47.5
Salaried employees	25,394	20,639	14,330	7,454	23.0	44.0	92.2
Wage earners (average number)	248,716	240,076	207,562	183,249	3.6	15.7	13.3
Primary horsepower	2,706,553	2,100,978	1,649,299	1,100,801	28.8	27.4	49.8
Capital	$1,258,370,594	$1,004,735,111	$700,182,310	$430,232,431	25.2	43.5	62.7
Salaries and wages	225,658,325	189,392,222	140,352,488	111,769,244	19.1	34.9	25.6
Salaries	37,515,927	26,191,464	17,860,495	9,433,368	43.2	46.6	89.3
Wages	188,142,398	163,200,758	122,491,993	102,335,876	15.3	33.2	19.7
Paid for contract work	251,082	94,237	115,563	547,216	166.4	−18.5	−78.9
Rent and taxes (including internal revenue)	6,063,587	3,657,314	[2]2,616,090	[2]2,058,847	65.8	.....	27.1
Cost of materials	590,825,692	657,500,856	441,204,432	390,895,277	−10.1	49.0	12.9
Value of products	918,664,565	985,722,534	673,965,026	597,211,716	−6.8	46.3	12.9
Value added by manufacture (value of products less cost of materials)	327,838,873	328,221,678	232,760,594	206,316,439	−0.1	41.0	12.8

[1] A minus sign (−) denotes decrease.

[2] Exclusive of internal revenue.

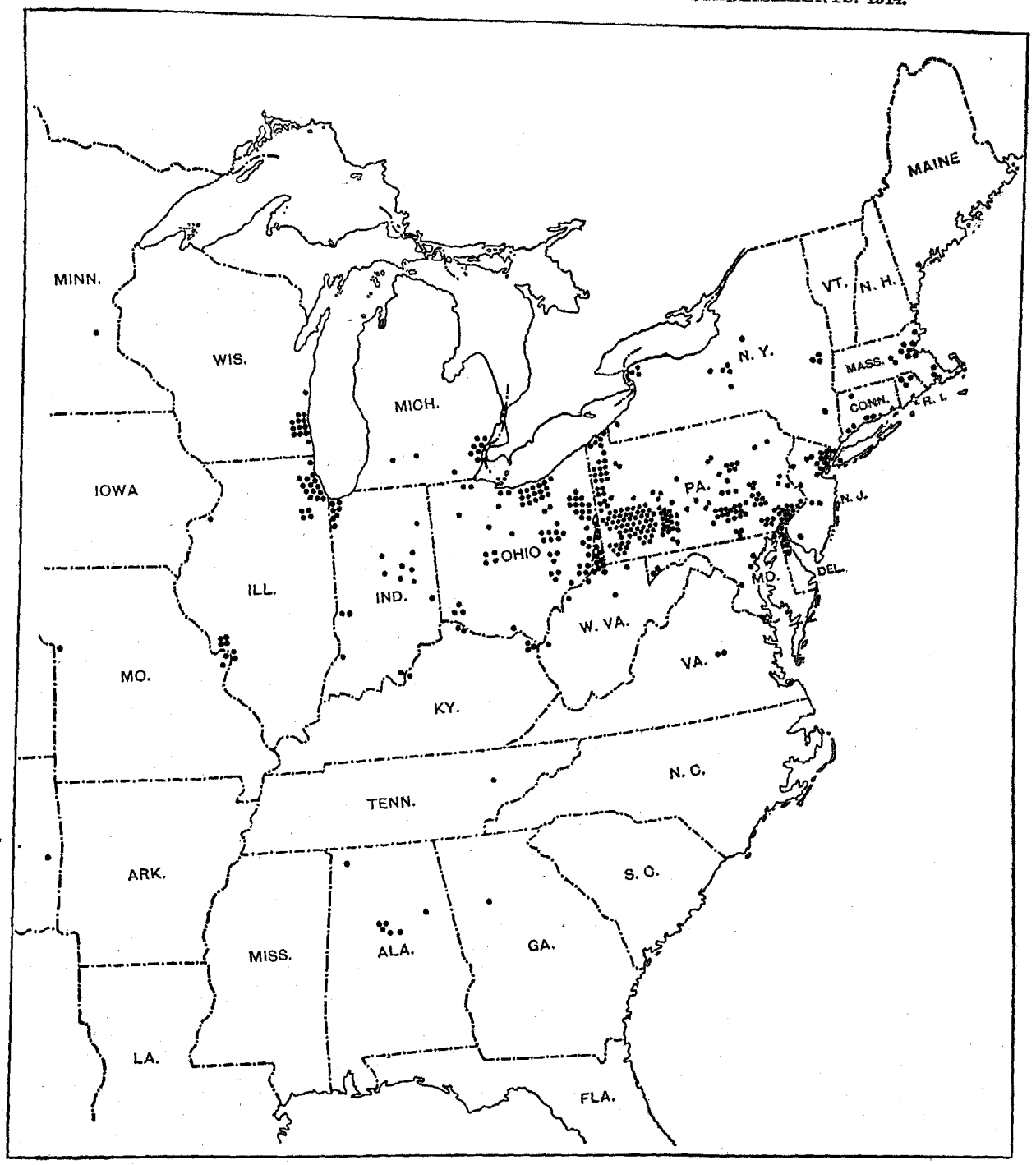
The value of products shown in the table, as well as the cost of materials, involves considerable duplication, due to the sale or transfer of the products of one establishment in the industry to another for use in further manufacture. Certain establishments in 1914 consumed, as material, ingots and rolled forms, costing in excess of $140,000,000, that were the products of other mills, though not necessarily made in that year. And, further, changes from time to time in prevailing prices of iron and steel commodities are variable factors of material expense and also of value of products. The value added by manufacture eliminates this duplication, and to some extent the variations in prices, and in general shows the growth in volume of business as measured in terms of money. The rate of increase in value of products up to 1909 was quite uniform for the successive decades, ranging from a minimum of 50.6 per cent for the decade 1869–1879 to a maximum of 79.3 per cent for the decade 1889–1899. For the decade 1899–1909 the ratio of increase was 65.1 per cent. The industrial depression of 1914 is the cause of the decrease shown for that year as compared with 1909. On the basis of value added by manufacture the ratios of growth for the four decades 1869–1909 are 56.9 per cent, 55.3 per cent, 78.1 per cent, and 59.1 per cent, respectively. At the earlier censuses forges and bloomeries, which manufacture hammered charcoal blooms and billets direct from iron ore, or from pig iron and scrap, were an important feature of the industry, but they have ceased to be a factor as independent establishments. In 1869 there were 82 such plants, with products valued at $7,647,000, and in 1909 but 4, with products valued at less than $350,000.

Geographic distribution.—The industry is concentrated largely in the Middle Atlantic and East North Central states and the Panhandle of West Virginia. Of the 427 establishments in 1914, 346, or 81 per cent, were located in the seven contiguous states of New York, New Jersey, Pennsylvania, West Virginia, Ohio, Indiana, and Illinois. The value of products of these states amounted to $840,691,126, or 91.5 per cent of the total for the United States. In 1909 the corresponding proportion was 91 per cent, in 1904, 90.1 per cent, and in 1899, 90.4 per cent.

The map on the following page shows the location of the establishments in each state as far west as Minnesota and Missouri. In addition, Texas, Oklahoma, Colorado, Oregon, and Washington reported 1 establishment each and California 7.

Different classes of work.—The industry comprises three classes of establishments: (1) Those equipped both with steel furnaces and hot rolls; (2) those equipped with steel furnaces, but not with hot rolls; and (3) those equipped with hot rolls, but not with steel furnaces. Most of the largest establishments belong to the first group, and all steel plants operated in conjunction with blast furnaces have rolling departments. On the other hand, all plants of the second group buy pig iron and scrap for steel making. Establishments of the third group include those that purchase their material in the form of ingots, blooms, slabs, or other shapes, and iron for muck-bar furnaces. Table 33 (page 26) shows, for 1914 and 1909, the number of establishments and value of products for the respective groups for the United States and for Pennsylvania and Ohio.

STEEL WORKS AND ROLLING MILLS—LOCATION OF ESTABLISHMENTS: 1914.



The output of the 113 establishments which both made and rolled steel was 64.7 per cent of the total value of products for the industry in 1914, a larger proportion than in 1909; and the steel works without rolling mills produced 4.3 per cent; and the rolling mills without steel works 31 per cent; each proportionately less than in 1909. These percentages, however, give a somewhat exaggerated idea of the importance of the independent rolling mills, because their products consist in considerable part of finished forms made from crude, and partially rolled steel, products of establishments of the first group.

Table 33

STATE.	Census year.	Total.	Steel works and rolling mills combined.	Steel works only.	Rolling mills only.	PER CENT OF TOTAL. Steel works and rolling mills.	Steel works only.	Rolling mills only.
United States:								
Number of establishments	1914	427	113	96	218	26.4	22.5	51.1
	1909	446	89	99	258	20.0	22.2	57.8
Value of products	1914	$918,664,565	$593,874,694	$39,783,006	$285,006,865	64.7	4.3	31.0
	1909	$985,722,534	$607,036,138	$45,876,568	$332,809,828	61.6	4.7	33.8
Pennsylvania:								
Number of establishments	1914	178	57	27	94	32.0	15.2	52.8
	1909	189	44	33	112	23.3	17.5	59.2
Value of products	1914	$448,106,324	$310,292,397	$10,516,470	$127,297,457	69.2	2.4	28.4
	1909	$500,343,995	$329,652,618	$20,786,673	$149,904,704	65.9	4.2	30.0
Ohio:								
Number of establishments	1914	70	16	14	40	22.9	20.0	57.1
	1909	75	13	13	49	17.3	17.3	65.3
Value of products	1914	$205,023,391	$122,970,850	$6,096,171	$75,956,370	60.0	2.9	37.1
	1909	$197,780,043	$100,239,521	$5,117,556	$92,422,966	50.7	2.6	46.7
All other states:								
Number of establishments	1914	179	40	55	84	22.4	30.7	46.9
	1909	182	32	53	97	17.6	29.1	53.3
Value of products	1914	$265,534,850	$160,611,447	$23,170,365	$81,753,038	60.5	8.7	30.8
	1909	$287,598,496	$177,143,999	$19,972,339	$90,482,158	61.6	6.9	31.5

Summary, by states.—Table 34 summarizes the more important statistics of the industry, by states, the states being arranged according to the value of products reported for 1914. Some of the states for which data can not be shown separately without disclosing the operations of individual establishments ranked higher than some of those named in the table.

Table 34

STATE.	STEEL WORKS AND ROLLING MILLS—CENSUS OF 1914. Number of establishments.	Wage earners. Average number.	Wage earners. Per cent distribution.	Wage earners. Rank. 1914	Wage earners. Rank. 1909	Value of products. Amount.	Value of products. Per cent distribution.	Value of products. Rank. 1914	Value of products. Rank. 1909	Value added by manufacture. Amount.	Value added by manufacture. Per cent distribution.	Value added by manufacture. Rank. 1914	Value added by manufacture. Rank. 1909
United States	427	248,716	100.0	....	....	$918,664,565	100.0	....	....	$327,838,873	100.0	....	....
Pennsylvania	178	131,955	53.0	1	1	448,106,324	48.8	1	1	162,724,240	49.6	1	1
Ohio	70	46,397	18.7	2	2	205,023,391	22.3	2	2	65,346,900	19.9	2	2
Illinois	25	15,408	6.2	3	3	64,995,121	7.1	3	3	25,057,057	7.6	3	3
Indiana	19	11,106	4.5	4	4	58,882,522	6.4	4	5	21,825,975	6.7	4	5
New York	24	10,788	4.3	5	5	32,077,757	3.5	5	4	13,861,144	4.2	5	4
West Virginia	15	5,348	2.1	6	6	21,185,559	2.3	6	6	6,527,191	2.0	6	6
Massachusetts	11	2,889	1.2	9	8	11,376,008	1.2	8	7	2,574,197	0.8	10	9
New Jersey	15	4,639	1.9	7	7	10,420,452	1.1	10	9	5,234,984	1.6	8	7
Kentucky	6	1,987	0.8	11	9	9,077,908	1.0	11	13	1,922,970	0.6	12	13
Wisconsin	12	2,029	0.8	10	13	6,008,549	0.7	12	10	2,453,409	0.7	11	11
California	7	1,244	0.5	15	17	4,213,736	0.5	14	16	1,540,269	0.5	14	17
Missouri	3	1,237	0.5	16	11	3,362,955	0.4	15	14	1,476,375	0.5	15	14
Michigan	9	718	0.3	19	16	1,716,351	0.2	17	17	845,410	0.3	17	18
Delaware	5	818	0.3	18	19	1,669,004	0.2	18	18	736,900	0.2	19	21
All other states	28	12,153	4.9	....	....	40,548,928	4.4	....	....	15,711,852	4.8	....	....

STATE.	PER CENT OF INCREASE.[1] Wage earners (average number) 1909–1914	1904–1909	1899–1904	Value of products. 1909–1914	1904–1909	1899–1904	Value added by manufacture. 1909–1914	1904–1909	1899–1904
United States	3.6	15.7	13.3	−6.8	46.3	12.9	−0.1	41.0	12.8
Pennsylvania	4.0	14.4	17.0	−10.4	37.5	9.3	−5.0	36.1	10.6
Ohio	20.2	39.0	0.4	3.7	76.6	13.6	11.6	73.3	9.8
Illinois	−12.4	6.9	20.7	−25.0	44.3	32.9	−17.5	42.1	41.3
Indiana	−9.4	69.9	−4.8	52.3	128.4	−12.5	73.9	108.7	−12.8
New York	6.9	34.1	71.6	−13.9	86.2	140.9	1.6	71.2	71.6
West Virginia	5.7	14.8	10.9	−5.6	66.7	0.4	−0.2	38.7	1.0
Massachusetts	−7.3	−31.4	−25.5	−16.2	13.6	−10.9	−27.2	−29.9	−14.8
New Jersey	−0.7	(2)	(2)	−13.3	(2)	(2)	−2.7	(2)	(2)
Kentucky	−16.2	10.4	21.7	16.7	26.1	23.2	−13.3	13.7	3.3
Wisconsin	−4.5	10.9	39.8	−44.1	45.5	22.9	−13.2	−1.8	10.3
California	19.8	34.3	39.3	19.7	136.4	65.3	31.4	65.1	80.2
Missouri	−44.5	65.1	−15.9	−32.9	67.2	−6.3	−31.5	52.7	−11.5
Michigan	−39.3	16.2	−30.2	−35.7	−1.5	−24.1	−21.1	17.5	−24.6
Delaware	15.2	−32.7	−29.2	−2.7	7.4	−49.5	12.3	0.2	−56.9
All other states	.....	.....	.....	.....	.....	.....	.....	.....	.....

[1] Percentages are based on figures in Table 69; a minus sign (−) denotes decrease. [2] Figures not strictly comparable.

Persons engaged in the industry.—Table 35 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, and average number of wage earners, distributed by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Table 35

CLASS.	Census year.	PERSONS ENGAGED IN THE STEEL-WORKS AND ROLLING-MILL INDUSTRY. Total.	Male.	Female.	Per cent of total. Male.	Female.
All classes	1914	274,162	270,720	3,442	98.7	1.3
	1909	260,762	257,962	2,800	98.9	1.1
Proprietors and officials	1914	4,527	4,517	10	99.8	0.2
	1909	4,286	4,278	8	99.8	0.2
Proprietors and firm members	1914	52	45	7	86.5	13.5
	1909	47	43	4	91.5	8.5
Salaried officers of corporations	1914	766	764	2	99.7	0.3
	1909	779	779	.....	100.0	.....
Superintendents and managers	1914	3,709	3,708	1	100.0	(1)
	1909	3,460	3,456	4	99.9	0.1
Clerks and other subordinate salaried employees	1914	20,919	18,466	2,453	88.3	11.7
	1909	16,400	14,613	1,787	89.1	10.9
Wage earners (average number)	1914	248,716	247,737	979	99.6	0.4
	1909	240,076	239,071	1,005	99.6	0.4
16 years of age and over	1914	247,991	247,048	943	99.6	0.4
	1909	238,937	237,996	941	99.6	0.4
Under 16 years of age	1914	725	689	36	95.0	5.0
	1909	1,139	1,075	64	94.4	5.6

[1] Less than one-tenth of 1 per cent.

Individual proprietors and firm members are few in number, the industry being mainly controlled by corporations. Of the 427 establishments, all but 20 are corporations. Females constitute but 1.3 per cent of the total number identified with the industry, and most of these are clerical employees, constituting 11.7 per cent of the clerks and other subordinate salaried employees in 1914, a slightly greater proportion than in 1909. Table 36 gives, for the several classes of persons engaged in the industry, the percentage of increase from 1909 to 1914, and the per cent distribution at the two censuses.

Table 36 — PERSONS ENGAGED IN THE STEEL-WORKS AND ROLLING-MILL INDUSTRY.

CLASS.	Per cent of increase,[1] 1909–1914.			Per cent distribution.					
				Total.		Male.		Female.	
	Total.	Male.	Female.	1914	1909	1914	1909	1914	1909
All classes	5.1	4.9	22.9	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials	5.6	5.6	.....	1.7	1.6	1.7	1.6	0.3	0.3
Proprietors and firm members	.....	.....	.....	(2)	(2)	(2)	(2)	0.2	0.1
Salaried officers of corporations	−1.7	−1.9	.....	0.3	0.3	0.3	0.3	0.1	.....
Superintendents and managers	7.2	7.3	.....	1.4	1.3	1.4	1.3	(2)	0.1
Clerks and other subordinate salaried employees	27.6	26.4	37.3	7.6	6.3	6.8	5.7	71.3	63.8
Wage earners (average number)	3.6	3.6	−2.6	90.7	92.1	91.5	92.7	28.4	35.9
16 years of age and over	3.8	3.8	0.2	90.5	91.7	91.2	92.3	27.4	33.6
Under 16 years of age	−36.3	−35.9	−43.8	0.3	0.4	0.3	0.4	1.0	2.3

[1] A minus sign (−) denotes decrease; percentages are omitted where base is less than 100. [2] Less than one-tenth of 1 per cent.

Wage earners under 16 years of age, though relatively few, and chiefly boys, show a material reduction in number in 1914, as compared with 1909. Of the total number of wage earners they constitute twenty-nine hundredths of 1 per cent in 1914 and forty-seven hundredths in 1909.

In order to compare the distribution of persons engaged in the industry according to occupational status in 1914 with that shown at censuses prior to 1909, it is necessary to use the classification employed at the earlier censuses. Such a comparison is made in Table 37 for 1914, 1909, and 1904.

Table 37 — PERSONS ENGAGED IN THE STEEL-WORKS AND ROLLING-MILL INDUSTRY.

CLASS.	Number			Per cent distribution.			Per cent of increase.	
	1914	1909	1904	1914	1909	1904	1909–1914	1904–1909
Total	274,162	260,762	221,956	100.0	100.0	100.0	5.1	17.5
Proprietors and firm members	52	47	64	(1)	(1)	(1)	.....	.....
Salaried employees	25,394	20,639	14,330	9.3	7.9	6.5	23.0	44.0
Wage earners (average)	248,716	240,076	207,562	90.7	92.1	93.5	3.6	15.7

[1] Less than one-tenth of 1 per cent.

The rate of increase in salaried employees has been higher than that for wage earners, a condition which holds for most of the iron and steel industries.

Wage earners employed, by months.—Table 38 gives, for the industry, the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

The average monthly employment of wage earners in 1914 was 248,716; in 1909, 240,076; and in 1904, 207,562. In 1914 the maximum number for the year were employed in March and the minimum in November. In 1909, however, this industry was at its low ebb for the year in March and the crest was in December. Of the three years, 1904 witnessed the minimum degree of variation within the year, both maximum and minimum months being in the midyear; but this year was at the bottom of a depression between two waves of industrial activity which had their crests in 1902 and 1907. The next low point was in 1908, with a crest following it in 1910. Hence 1909 was a year of progressive improvement. A slight depression occurred in 1911, but 1912 and 1913 were years of great activity, with the largest output of steel and rolled products for any years up to that time. Then came in 1914 the depression due to the foreign war, and following it, showing first in the increased number of wage earners reported for December, 1914, came the industrial expansion of 1915 and 1916, which has taxed the capacity of the mills.

Table 38 — WAGE EARNERS IN THE STEEL-WORKS AND ROLLING-MILL INDUSTRY.

MONTH.	Number.[1]			Per cent of maximum.		
	1914	1909	1904	1914	1909	1904
January	257,651	216,349	191,219	94.9	76.3	86.8
February	262,418	215,650	205,136	96.6	76.0	93.1
March	271,531	215,076	215,054	100.0	75.8	97.7
April	270,941	217,307	219,645	99.8	76.6	99.7
May	254,443	218,424	220,229	93.7	77.0	100.0
June	254,827	235,533	212,304	93.8	83.0	96.4
July	252,680	234,151	190,526	93.1	82.6	86.5
August	247,953	242,077	196,170	91.3	85.3	89.1
September	249,635	258,925	200,425	91.9	91.3	91.0
October	233,338	269,255	208,716	85.9	94.9	94.8
November	210,279	274,525	212,299	77.4	96.8	96.4
December	218,896	283,629	219,021	80.6	100.0	99.5

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904 the average number employed during the month.

Table 39 gives the total average number of wage earners employed during 1914, together with the total number employed on the 15th of each month, or the nearest representative day, for each state in which the average number of wage earners was 500 or more in 1914.

Table 39

WAGE EARNERS EMPLOYED IN THE STEEL-WORKS AND ROLLING-MILL INDUSTRY: 1914.
[Month of maximum employment for each state is indicated by **boldface** figures and that of minimum by *italic* figures.]

STATE.	Average number employed during year.	Number employed on 15th day of the month or nearest representative day.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States	248,716	257,651	262,418	271,531	270,941	254,443	254,827	252,680	247,953	249,635	233,338	*210,279*	218,896	77.4
California	1,244	1,339	1,265	1,239	1,149	*1,136*	1,213	1,312	1,293	1,266	1,237	1,197	1,282	84.8
Delaware	818	807	803	**858**	850	825	825	820	817	839	808	790	*774*	90.2
Illinois	15,408	16,551	16,814	**17,644**	17,380	16,191	16,357	15,629	15,427	16,041	13,975	11,728	*11,159*	63.2
Indiana	11,106	11,008	11,334	12,426	12,574	11,628	11,554	12,248	**12,629**	11,863	9,480	*8,049*	8,479	63.7
Kentucky	1,987	1,954	2,156	2,132	2,209	2,007	1,948	*1,490*	1,820	2,157	2,102	1,912	1,957	67.5
Massachusetts	2,889	3,184	3,169	3,185	3,089	2,984	2,870	2,862	2,806	2,891	2,886	*2,368*	2,374	74.3
Michigan	718	726	780	806	875	696	751	730	*680*	697	634	667	634	70.9
Missouri	1,237	1,300	1,057	1,173	1,238	1,362	1,446	1,483	1,527	1,415	1,132	891	*820*	53.7
New Jersey	4,639	4,751	4,888	**4,913**	4,840	4,698	4,491	4,527	4,423	4,654	4,595	4,472	*4,416*	89.9
New York	10,788	11,009	11,096	11,716	**12,008**	10,599	11,335	10,326	*9,701*	10,677	10,510	10,415	10,064	80.8
Ohio	46,397	47,117	49,467	**51,727**	50,869	46,394	47,493	47,420	46,984	47,006	45,152	*36,645*	40,490	70.8
Pennsylvania	131,955	138,000	139,581	**142,367**	141,422	135,080	134,336	134,420	130,570	130,917	122,569	*114,695*	119,503	80.6
West Virginia	*5,348*	6,093	6,054	6,599	**6,860**	5,426	5,229	4,919	4,991	5,253	4,681	*3,657*	4,414	53.3
Wisconsin	2,029	1,904	2,031	2,219	2,211	**2,226**	1,960	2,104	2,093	2,073	1,896	*1,815*	1,816	81.5

In the country as a whole approximately 60,000 more wage earners were employed in March than in November, and of these approximately 27,600 were in Pennsylvania, 15,000 in Ohio, and 6,000 in Illinois. In Missouri and West Virginia the number of wage earners employed in the maximum month was nearly twice the number reported for the minimum month. Ranked according to degree of variation between minimum and maximum, the states above the average for the United States (77.4 per cent), or those showing the highest percentages or least range of fluctuation, are Delaware, New Jersey, California, Wisconsin, New York, and Pennsylvania, in the order named.

Prevailing hours of labor.—In Table 40 the average number of wage earners reported for 1914 and 1909 for the industry has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The statistics are given, by states, for each state in which the average number of wage earners was 500 or more in 1914, and for which data can be shown separately without disclosing the operations of individual establishments. The number employed in each establishment is classified as a total, even though a few employees worked a greater or less number of hours.

The figures emphasize the tendency toward a shortening of the hours of employment. The average number of hours per wage earner per week, obtained by computing the total number of hours of labor per week for all wage earners and dividing this total by the number of wage earners, was 59.5 in 1914 and 61.3 in 1909, indicating an average decrease of 1.8 hours per week for the five-year period. Data are not available for an estimate of the average number of hours per week for the prior censuses. Of course the depression in the industry prevailing in 1914 may have influenced the average hours of labor.

In making this computation the number of wage earners in each group is multiplied by the number of hours of labor per week for the group and the products of all the groups added. The lower group, "48 hours and under," has been figured at 48 hours; the "between 48 and 54" group at 51 hours; the "between 54 and 60" group at 57 hours; the "between 60 and 72" group at 66 hours; and the "over 72" group at 72 hours. The upper groups include some establishments in essentially continuous operation with day and night shifts and with periodic changes. Although in some cases certain classes of employees may average 84 hours per week on full time, yet the average full-time hours will be somewhat less. Men work under a diversity of conditions and the same hours of labor do not necessarily apply to all employees in a plant. Aside from regular 6-day men and regular 7-day men there are employees working 6 and 7 days in rotation, or 1 day off every 2 weeks; others working 5 days, 6 days, and 7 days in rotation, an average of 6 days per week; others working 6 days, 6 days, and 7 days in rotation, or 2 days off every 3 weeks; others 6 days, 7 days, and 7 days in rotation, or 1 day off every 3 weeks; and men working 6 days per week normally with 7 days every fourth week.

In 1909, 164,695, or 68.6 per cent, of the total average number of wage earners were employed in establishments where the prevailing hours of labor were 60 or more per week, while but 138,099, or 55.5 per cent, were so employed in 1914. This condition holds for every state except Kentucky and Ohio, where

the number in the 60 and over class is larger in 1914 than in 1909, both actually and proportionately. The proportion for 60 or more hours per week is highest in Massachusetts and next highest in Illinois.

Table 40

STATE.	Census year.	STEEL WORKS AND ROLLING MILLS—WAGE EARNERS. Total.	Average number in establishments where the prevailing hours of labor per week were— 48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72.	Over 72.
United States	1914	248,716	19,972	19,084	25,565	45,996	77,820	25,714	34,089	476
	1909	240,076	18,283	4,094	23,982	29,022	82,130	30,247	49,364	2,954
California	1914	1,244	435	178	444	4	183	.....	.....	.....
	1909	1,038	.....	348	69	179	442	.....	.....	.....
Delaware	1914	818	337	242	.....	239	.....	.....	.....	.....
	1909	710	290	.....	.....	420	.....	.....	.....	.....
Illinois	1914	15,408	1,469	2,003	639	94	2,656	5,689	2,858	.....
	1909	17,584	.....	.....	2,763	1,142	3,230	247	10,074	128
Indiana	1914	11,106	2,900	151	1,962	1,584	4,509	.....	.....	.....
	1909	12,255	101	.....	1,647	.....	4,120	1,518	4,869	.....
Kentucky	1914	1,987	1,136	.....	.....	158	301	392	.....	.....
	1909	2,372	1,446	.....	.....	256	180	.....	490	.....
Massachusetts	1914	2,889	15	55	257	368	2,194	.....	.....	.....
	1909	3,115	.....	13	39	376	2,687	.....	.....	.....
Michigan	1914	718	.....	121	79	457	61	.....	.....	.....
	1909	1,183	.....	.....	.....	317	866	.....	.....	.....
Missouri	1914	1,237	339	.....	259	.....	639	.....	.....	.....
	1909	2,227	846	.....	.....	.....	1,381	.....	.....	.....
New Jersey	1914	4,639	.....	1,842	579	1,067	1,151	.....	.....	.....
	1909	4,671	.....	225	1,007	2,134	224	1,081	.....	.....
New York	1914	10,788	.....	173	1,796	2,843	5,976	.....	.....	.....
	1909	10,091	.....	67	423	1,695	4,745	.....	3,161	.....
Ohio	1914	46,397	3,303	2,013	2,961	8,094	20,551	4,453	4,997	25
	1909	38,586	1,483	44	5,442	7,260	13,352	6,296	4,709	.....
Pennsylvania	1914	131,955	6,521	11,902	14,545	26,948	34,721	12,933	23,934	451
	1909	126,911	12,245	3,237	11,014	12,292	45,527	17,921	21,849	2,826
West Virginia	1914	5,348	2,123	51	962	740	535	937	.....	.....
	1909	5,060	1,779	.....	812	312	315	1,842	.....	.....
Wisconsin	1914	2,029	89	171	32	925	812	.....	.....	.....
	1909	2,124	10	.....	10	102	977	.....	1,025	.....

Character of ownership.—The establishments in this industry are largely owned by corporations, and the figures for the number of establishments, number of wage earners, and value of products for corporate-owned establishments and for all other establishments are given in Table 41 for 1914 and 1909.

Table 41

	Census year.	STEEL WORKS AND ROLLING MILLS—CHARACTER OF OWNERSHIP. Total.	Corporations.	All other.[1]	PER CENT OF TOTAL. Corporations.	All other.
Number of establishments.	1914	427	407	20	95.3	4.7
	1909	446	424	22	95.1	4.9
Average number of wage earners.	1914	248,716	246,020	2,696	98.9	1.1
	1909	240,076	237,684	2,392	99.0	1.0
Value of products.	1914	$918,664,565	$914,199,638	$4,464,927	99.5	0.5
	1909	985,722,534	980,546,617	5,175,917	99.5	0.5

[1] Includes eight establishments owned by individuals in each year, balance chiefly firms.

Size of establishments.—Table 42 gives data for establishments classified according to the value of their products for 1914, 1909, and 1904, and shows the tendency in the industry toward large organizations.

Table 42

VALUE OF PRODUCT.	STEEL WORKS AND ROLLING MILLS. Number of establishments. 1914	1909	1904	Value of products. 1914	1909	1904
Total	427	446	415	$918,664,565	$985,722,534	$673,965,026
Less than $20,000	9	15	13	79,697	195,454	133,948
$20,000 to $100,000	34	44	44	1,898,617	2,643,474	2,357,509
$100,000 to $1,000,000	194	201	227	84,877,224	86,119,267	101,297,782
$1,000,000 and over	190	186	131	831,809,027	896,764,339	570,175,787
$1,000,000 to $10,000,000	170	163	116	480,266,119	471,227,229	323,487,102
$10,000,000 and over	20	23	15	351,542,908	425,537,110	246,688,685
Per cent distribution:						
Less than $20,000	2.1	3.4	3.1	(1)	(1)	(1)
$20,000 to $100,000	8.0	9.9	10.6	0.2	0.3	0.4
$100,000 to $1,000,000	45.4	45.1	54.7	9.2	8.7	15.0
$1,000,000 and over	44.5	41.7	31.6	90.5	91.0	84.6
$1,000,000 to $10,000,000	39.8	36.5	28.0	52.2	47.8	48.0
$10,000,000 and over	4.7	5.2	3.6	38.3	43.2	36.6
Average per establishment	.....	.....	.....	$2,151,439	$2,210,140	$1,624,012

[1] Less than one-tenth of 1 per cent.

The industry ranks first among all manufacturing industries in number of large plants. In 1914, 190 establishments, or 44.5 per cent of the total number, reported products valued at $1,000,000 or more, and 20 of these had outputs in excess of $10,000,000. These 20 plants produced more than one-third of the total value of products. The average number of wage earners per establishment increased from 500 in 1904

to 538 in 1909, and to 582 in 1914; the average value of products from $1,624,000 in 1904 to $2,210,000 in 1909, with a drop to $2,151,000 in 1914; and the average value added by manufacture from $561,000 in 1904 to $736,000 in 1909, and to $768,000 in 1914.

Table 43 shows the size of establishments in 1914 and 1909, as measured by the number of wage earners employed for the industry as a whole and for the 14 leading states.

Table 43

STATE.	Census year.	TOTAL.		STEEL WORKS AND ROLLING MILLS—ESTABLISHMENTS EMPLOYING—															
				1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.	
		Establishments.	Wage earners (average number).	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States	1914	427	248,716	3	8	16	196	30	1,119	46	3,629	92	15,414	94	33,921	87	61,185	59	133,244
	1909	446	240,076	5	16	21	271	34	1,151	60	4,532	89	14,977	98	34,988	82	57,198	57	126,943
California	1914	7	1,244	1	4	.....	.....	1	34	.....	.....	3	479	2	727	.....	.....	.....	.....
	1909	5	1,038	1	2	.....	.....	.....	.....	1	67	1	179	2	790	.....	.....	.....	.....
Delaware	1914	5	818	.....	.....	.....	.....	.....	.....	1	55	4	763	.....	.....	.....	.....	.....	.....
	1909	5	710	.....	.....	.....	.....	1	40	1	75	3	595	.....	.....	.....	.....	.....	.....
Illinois	1914	25	15,408	.....	.....	.....	.....	.....	.....	3	242	7	1,002	7	2,225	3	2,266	5	9,673
	1909	24	17,584	.....	.....	.....	.....	1	42	2	177	7	1,234	5	1,511	4	2,610	5	12,010
Indiana	1914	19	11,106	.....	.....	.....	.....	1	50	2	172	4	610	4	1,619	5	3,214	3	5,441
	1909	17	12,255	.....	.....	.....	.....	.....	.....	2	189	3	466	1	400	8	5,213	3	5,987
Kentucky	1914	6	1,987	.....	.....	.....	.....	.....	.....	.....	.....	1	158	5	1,829	.....	.....	.....	.....
	1909	7	2,372	.....	.....	.....	.....	.....	.....	1	55	2	336	3	1,190	1	791	.....	.....
Massachusetts	1914	11	2,889	.....	.....	4	49	2	55	.....	.....	3	591	1	311	.....	.....	1	1,883
	1909	9	3,115	.....	.....	2	26	2	49	.....	.....	2	254	2	554	.....	.....	1	2,232
Michigan	1914	9	718	.....	.....	1	19	2	89	3	209	3	401	.....	.....	.....	.....	.....	.....
	1909	8	1,183	.....	.....	.....	.....	1	49	4	294	1	186	2	654	.....	.....	.....	.....
Missouri	1914	3	1,237	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	598	1	639	.....	.....
	1909	4	2,227	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	715	2	1,512	.....	.....
New Jersey	1914	15	4,639	.....	.....	1	18	2	78	2	155	5	892	2	630	2	1,289	1	1,577
	1909	16	4,671	.....	.....	1	6	.....	.....	4	277	5	845	3	1,027	2	1,435	1	1,081
New York	1914	24	10,788	1	1	.....	.....	3	115	5	458	4	772	3	912	5	3,328	3	5,202
	1909	25	10,091	2	5	1	12	3	118	4	291	4	588	6	2,219	2	1,573	3	5,285
Ohio	1914	70	46,397	1	3	2	25	3	101	6	455	13	2,309	12	4,481	23	16,743	10	22,286
	1909	75	38,586	.....	.....	5	66	5	157	7	534	17	2,867	17	6,780	16	12,149	8	16,033
Pennsylvania	1914	178	131,955	.....	.....	1	15	9	318	17	1,371	38	6,104	43	16,209	38	26,509	32	81,429
	1909	189	126,911	1	4	5	65	12	438	25	1,894	34	5,772	40	13,847	42	28,855	30	76,036
West Virginia	1914	15	5,348	.....	.....	.....	.....	2	97	1	71	.....	.....	9	2,950	2	1,206	1	1,024
	1909	16	5,060	.....	.....	1	13	1	44	2	164	3	489	7	2,537	1	650	1	1,163
Wisconsin	1914	12	2,029	.....	.....	4	48	3	121	1	86	2	345	.....	.....	2	1,429	.....	.....
	1909	14	2,124	1	5	3	38	4	111	3	236	1	140	.....	.....	1	568	1	1,026
All other states	1914	28	12,153	.....	.....	3	22	2	61	5	355	5	988	4	1,430	6	4,562	3	4,735
	1909	32	12,149	.....	.....	3	45	4	103	4	279	6	1,026	8	2,764	3	1,842	4	6,090

Establishments employing 1,000 wage earners or more covered 53.6 per cent of the total number of wage earners in 1914 and 52.9 per cent in 1909. This group includes a number of plants employing several thousand wage earners, the maximum in 1909 being nearly 7,000, and in 1914 over 8,000.

Table 44 summarizes the statistics by groups, extending to those employing over 4,000 each, and gives the percentages of distribution for number of establishments and number of wage earners for 1914 and 1909.

Economic gains.—A comparison of the wage expense and the average number of wage earners, as reported at the different censuses, indicates a tendency toward an increase in wages, although this may in part be due to the employment of relatively more high-grade men at one census than at another, and not to any material advance in the wages for specific groups of wage earners. Particularly during a slack period the skilled men, hard to replace when needed, will be retained and reduction made in the lower grades, and a decrease in the number of men in the lower paid grades without a corresponding decrease in the higher grades would tend to raise the average wage for all grades.

Table 44

CLASS.	STEEL WORKS AND ROLLING MILLS.				PER CENT DISTRIBUTION.			
	Number of establishments.		Average number of wage earners.		Number of establishments.		Average number of wage earners.	
	1914	1909	1914	1909	1914	1909	1914	1909
Total	427	446	248,716	240,076	100.0	100.0	100.0	100.0
Establishments employing:								
1 to 20 wage earners	19	26	204	287	4.5	5.8	0.1	0.1
21 to 50 wage earners	30	34	1,119	1,151	7.0	7.6	0.4	0.5
51 to 100 wage earners	46	60	3,629	4,532	10.8	13.4	1.5	1.9
101 to 250 wage earners	92	89	15,414	14,977	21.5	20.0	6.2	6.2
251 to 500 wage earners	94	98	33,921	34,988	22.0	22.0	13.6	14.6
501 to 1,000 wage earners	87	82	61,185	57,198	20.4	18.4	24.6	23.8
Over 1,000 wage earners	59	57	133,244	126,943	13.8	12.8	53.6	52.9
1,001 to 2,000 wage earners	38	36	52,652	45,905	8.9	8.1	21.2	19.1
2,001 to 4,000 wage earners	[1] 13	13	34,440	36,569	3.0	2.9	13.8	15.3
Over 4,000 wage earners	[1] 8	8	46,152	44,469	1.9	1.8	18.6	18.5
Average per establishment	.....	.....	582	538	.....	.....	.....	.....

[1] Distribution by states: 2,001 to 4,000, Illinois 2, Indiana 1, New York 1, Ohio 2, Pennsylvania 7; over 4,000: Ohio 2, Pennsylvania 6.

Notwithstanding this tendency toward an increase in wages a comparison of wage expense with tonnage output shows an economic gain. In 1899 the average wage expense per ton of product, taking the aggregate tonnage of rolled, forged, and other classified products, was $9.84. For 1904 the resultant is $9.60, and 1909, $8.47—a progressive decrease. Of course there may not have been uniform distribution of the various classes of products at each census, some requiring the expenditure of more labor than others, but, apparently, any increase in wage expense from 1899 to 1909 was more than balanced by an increase in efficiency of labor, methods, and equipment. For 1914 the average wage expense per ton of product was $10.18, higher than for either of the previous years, which is undoubtedly chargeable to the disturbance of trade conditions incident to the European war.

Engines and power.—Power was first reported for this industry at the census of 1889, 535,430 horsepower. In 1899 it was 1,100,801 horsepower, more than double that of 1889, and in 1909, the next decade, it had again doubled, or nearly so. Table 45 shows, for 1914, 1909, and 1904, for the industry, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

Table 45 STEEL WORKS AND ROLLING MILLS.

POWER.	Number of engines or motors.			Horsepower. Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	11,227	8,244	6,359	2,706,553	2,100,978	1,649,299	100.0	100.0	100.0
Owned	5,328	6,033	5,858	2,521,392	2,042,066	1,635,081	93.2	97.2	99.1
Steam engines and turbines [1]	5,121	5,865	5,746	2,435,319	1,950,846	1,618,480	90.0	93.1	98.1
Internal-combustion engines	123	118	53	73,752	79,391	11,800	2.7	3.8	0.7
Water wheels, turbines, and motors	84	50	59	12,321	5,829	4,795	0.5	0.3	0.3
Rented	5,899	2,211	501	185,161	58,912	14,218	6.8	2.8	0.9
Electric	5,899	2,211	501	182,204	58,707	6,798	6.7	2.8	0.4
Other				2,957	115	7,420	0.1	[2]	0.4
Electric	45,806	27,709	12,084	1,207,715	716,609	254,258	100.0	100.0	100.0
Rented	5,899	2,211	501	182,204	58,707	6,798	15.1	8.2	2.7
Generated by establishments reporting	39,907	25,558	12,183	1,025,511	657,812	247,460	84.9	91.8	97.3

[1] Figures for horsepower include for 1909 and 1904 the amounts reported under the head of "other" owned power. [2] Less than one-tenth of 1 per cent.

The total primary power in 1914 exceeded that in 1909 by 605,575 horsepower, an increase of 28.8 per cent; and the power equipment in 1909 exceeded that of 1904 by 451,679 horsepower, or 27.4 per cent. The gas or internal-combustion engines in use are of large capacity. In a number of cases where blast furnaces are operated in conjunction with steel furnaces and hot rolls, blast-furnace gas is utilized in gas engines for all departments. The increase in electric power has been large. The aggregate rated capacity of the electric motors installed was equal to 15.4 per cent of the primary horsepower in 1904, 34.1 per cent in 1909, and 44.6 per cent in 1914. It should be said, however, that the electric power reported is the rated capacity of all electric motors, and, whether the motors be those of an establishment that purchases current for power purposes, or an establishment that generates current, it includes in many cases motor capacity largely in excess of the maximum quantity of current used at any time. In many cases where establishments generate electric power, and each machine has its motor, the aggregate capacity of the motors is greatly in excess of the primary power, for all the motors are never in use at the same time.

The figures for horsepower, by states, are given in Table 70.

Fuel.—Table 46 shows, for 1914, the quantity of each kind of fuel used, for which statistics were obtained, for the industry as a whole, and for the 14 leading states.

Table 46 STEEL WORKS AND ROLLING MILLS: 1914.

STATE.	Coal. Anthracite (tons, 2,240 lbs.).	Coal. Bituminous (tons, 2,000 lbs.).	Coke (tons, 2,000 lbs.).	Oil, including gasoline (barrels).	Gas (1,000 cubic feet).
United States	558,723	20,343,767	495,214	3,011,102	81,310,122
California		118	3,911	191,601	
Delaware	2,734	29,047	3,125	2,941	20
Illinois	583	1,070,382	40,008	848,078	902
Indiana	4	1,211,399	13,654	102,716	32,778
Kentucky		160,830	11,128		1,557,449
Massachusetts	722	125,184	1,068	65,648	7,430
Michigan		22,173	2,030	23,404	4,505
Missouri		48,135	1,836	95,976	
New Jersey	30,031	234,186	3,373	183,580	2,173
New York	6,806	700,937	20,703	78,570	31,471
Ohio	574	4,209,000	134,533	132,124	12,067,011
Pennsylvania	476,046	10,335,061	102,024	1,000,833	63,406,100
West Virginia		405,324	10,454		2,803,410
Wisconsin		66,701	3,110	10,860	4,077
All other states	31,023	1,034,300	67,451	208,762	1,391,827

SPECIAL STATISTICS RELATING TO MATERIALS, PRODUCTS, AND EQUIPMENT.

MATERIALS.

Table 47 shows the statistics for the chief classes of materials consumed by the steel works and rolling mills in the years 1914, 1909, 1904, and 1899. Detail statistics by states for 1914 are given in Table 68. There is considerable duplication due to the fact that the partially manufactured materials, such as ingots, blooms, etc., and rolled forms purchased, or produced by the consumer in one plant and used as material in another, are the products of raw materials consumed in their manufacture and reported as such. This duplication in the main is represented by the ingots, blooms, etc., the rolled forms for further manufacture, and the scrap produced in works other than the one where consumed. There is included under "all other materials" the cost of the rolled forms other than those specifically reported acquired by an establishment from outside sources and charged to the plant using them as material.

Table 47

MATERIALS USED.	STEEL WORKS AND ROLLING MILLS—MATERIALS. (Ton, 2,240 pounds.)			
	1914	1909	1904	1899
Total cost	$590,825,692	$657,500,856	$441,204,432	$390,895,277
Iron and steel:				
For furnaces and hot rolls—				
Pig iron, including ferroalloys—				
Tons	17,429,657	19,076,889	12,191,228	10,411,281
Cost	$248,630,958	$297,471,122	$172,101,436	$151,064,348
Pig iron—				
Tons	17,128,092	18,712,304	(1)	(1)
Cost	$232,131,772	$282,663,740	(1)	(1)
Produced by consumer—				
Tons	15,111,458	15,108,244	(1)	(1)
Assigned cost	$201,965,395	$224,474,026	(1)	(1)
Purchased—				
Tons	2,016,634	3,604,060	(1)	(1)
Cost	$30,166,377	$58,189,714	(1)	(1)
Ferroalloys—Spiegeleisen, ferromanganese, ferrosilicon, etc.—				
Tons	301,565	364,585	(1)	(1)
Cost	$16,499,186	$14,807,382	(1)	(1)
Produced by consumer—				
Tons	108,238	144,492	(1)	(1)
Assigned cost	$3,849,738	$3,776,798	(1)	(1)
Purchased—				
Tons	193,327	220,093	(1)	(1)
Cost	$12,649,448	$11,030,584	(1)	(1)
Scrap, including old rails, not intended for rerolling—				
Total consumption, tons	10,656,187	9,929,710		
From outside sources—				
Tons	5,070,880	4,803,617	5,124,277	4,126,980
Cost	$59,381,527	$72,722,831	$67,601,248	$66,852,621
Produced by consumer in other works—				
Tons	899,113	773,843	(1)	(1)
Assigned cost	$11,384,960	$10,629,317	(1)	(1)
Purchased—				
Tons	4,171,767	4,029,774	(1)	(1)
Cost	$47,996,567	$62,093,514	(1)	(1)
Made and consumed in same works, tons	5,585,307	5,126,093	(1)	(1)
Ingots, blooms, billets, slabs, muck and scrap bar, rails for rerolling, and sheet and tin plate bars, not produced in works where consumed—				
Tons	6,458,399	6,508,249	4,920,177	3,876,456
Cost	$132,178,063	$145,575,635	$110,268,828	$97,809,926
Produced by consumer in other works—				
Tons	2,882,069	3,080,672	(1)	(1)
Assigned cost	$57,587,159	$62,594,558	(1)	(1)
Purchased—				
Tons	3,576,330	3,427,577	(1)	(1)
Cost	$74,590,904	$82,981,077	(1)	(1)
Iron and steel—Continued.				
For furnaces and hot rolls—Con.				
Iron ore—				
Tons	999,472	835,338	549,995	346,319
Cost	$4,252,201	$4,292,963	$2,396,792	$1,348,809
Domestic—				
Tons	969,617	823,306	546,262	(1)
Cost	$4,053,213	$4,224,593	$2,372,739	(1)
Foreign—				
Tons	29,855	12,032	3,733	(1)
Cost	$198,988	$68,370	$24,053	(1)
Rolled forms for further manufacture—				
Skelp—				
Total consumption, tons	1,376,313	1,578,290		
From outside sources—				
Tons	192,557	176,717	259,643	(1)
Cost	$5,496,850	$5,704,856	$7,331,935	(1)
Produced by consumer in other works—				
Tons	47,998	35,221	(1)	(1)
Assigned cost	$1,662,917	$1,151,430	(1)	(1)
Purchased—				
Tons	144,559	141,496	(1)	(1)
Cost	$3,833,933	$4,553,426	(1)	(1)
Made and consumed in same works, tons	1,183,756	1,401,573	(1)	(1)
Wire rods—				
Total consumption, tons	1,494,761	1,465,221		
From outside sources—				
Tons	95,695	146,425	161,914	136,725
Cost	$2,352,027	$4,252,695	$4,774,383	$5,419,617
Produced by consumer in other works—				
Tons	76,717	128,291	(1)	(1)
Assigned cost	$1,884,312	$3,547,577	(1)	(1)
Purchased—				
Tons	18,978	18,134	(1)	(1)
Cost	$487,715	$705,118	(1)	(1)
Made and consumed in same works, tons	1,399,066	1,318,796	(1)	(1)
Copper ingots, billets, blooms, bars, scrap, etc.:				
Tons	13,335	19,545	(1)	(1)
Cost	$4,069,309	$5,756,018	(1)	(1)
Fuel and rent of power, cost	$55,447,804	$46,136,725	$35,386,666	$22,463,209
All other materials, cost	$79,016,953	$75,588,011	$41,343,144	$45,936,747

(1) Figures not available.

It is evident that the amount of partly rolled steel and finished rolled forms used as material by establishments within the industry may vary from census to census because of changes in the relationship of plants and methods of conducting business. The consumption of pig iron and ferroalloys in 1914 shows a decrease of 1,647,232 tons, or 8.6 per cent, from the amount consumed in 1909, and in cost a decrease equal to 16.4 per cent of that reported in 1909. The greater part of the pig iron is produced in blast furnaces owned by the consumers. Table 48 gives the statistics pertaining thereto for the United States and for Ohio and Pennsylvania.

Of the scrap used (Table 47) two-fifths of the total quantity was purchased, 39.2 per cent in 1914 and 40.6 per cent in 1909, and three-fifths was produced by the consumers either in the same works or in other works. Of the consumption of ingots and partially rolled material acquired from outside sources—that is, either purchased or transferred from one plant to another and used in the latter as material—3,576,330 tons in 1914, or 55.4 per cent of the total quantity, and 3,427,577 tons, or 52.7 per cent, in 1909, represented purchases from unaffiliated concerns. The

rolling mills consumed in 1914, in their pipe and tube departments, 1,376,313 tons of skelp, an amount equal to 70.2 per cent of the skelp production, as compared with 75.7 per cent in 1909. The consumption of iron or steel wire rods by the rolling mills in the wire establishments affiliated therewith amounted to 1,494,761 tons in 1914 and to 1,465,221 tons in 1909, equal to a little more than three-fifths of the total iron or steel wire rod output in both years. Considerable copper is handled by the iron and steel mills, 13,335 long tons in 1914, and 19,545 in 1909. The statistics do not show the cost of the different fuels, but the total expenditure for fuel in 1914 was $53,600,956, and for rented power $1,846,848. These two items constituted 9.3 per cent of the total cost of materials in 1914, as compared with 7 per cent in 1909, 8 per cent in 1904, and 5.7 per cent in 1899.

Table 48

	Census year.	STEEL WORKS AND ROLLING MILLS—PIG-IRON CONSUMPTION. Total quantity, tons.	Produced by companies consuming.	Purchased.	PER CENT OF TOTAL. Produced.	Purchased.
United States:						
All pig iron	1914	17,429,657	15,219,696	2,209,961	87.3	12.7
	1909	19,076,889	15,252,736	3,824,153	80.0	20.0
Pig iron, not including ferroalloys.	1914	17,128,092	15,111,458	2,016,634	88.2	11.8
	1909	18,712,304	15,108,244	3,604,060	80.7	19.3
Ferroalloys—spiegeleisen ferromanganese, ferrosilicon, etc.	1914	301,565	108,238	193,327	35.9	64.1
	1909	364,585	144,492	220,093	39.6	60.4
Ohio:						
All pig iron	1914	4,388,023	3,962,149	425,874	90.3	9.7
	1909	4,209,149	3,182,915	1,026,234	75.6	24.4
Pig iron, not including ferroalloys.	1914	4,341,857	3,951,843	390,014	91.0	9.0
	1909	4,172,114	3,172,453	999,661	76.0	24.0
Ferroalloys—spiegeleisen ferromanganese, ferrosilicon, etc.	1914	46,166	10,306	35,860	22.3	77.7
	1909	37,035	10,462	26,573	28.2	71.8
Pennsylvania:						
All pig iron	1914	8,400,181	7,276,706	1,123,475	86.6	13.4
	1909	9,317,903	7,274,901	2,043,002	78.1	21.9
Pig iron, not including ferroalloys.	1914	8,262,049	7,230,146	1,031,903	87.5	12.5
	1909	9,158,260	7,197,182	1,961,078	78.6	21.4
Ferroalloys—spiegeleisen, ferromanganese, ferrosilicon, etc.	1914	138,132	46,560	91,572	33.7	66.3
	1909	159,643	77,719	81,924	48.7	51.3
All other states:						
All pig iron	1914	4,641,453	3,980,841	660,612	85.8	14.2
	1909	5,549,837	4,794,920	754,917	86.4	13.6
Pig iron, not including ferroalloys.	1914	4,524,186	3,929,469	594,717	86.9	13.1
	1909	5,381,930	4,738,609	643,321	88.0	12.0
Ferroalloys—spiegeleisen ferromanganese, ferrosilicon, etc.	1914	117,267	51,372	65,895	43.8	56.2
	1909	167,907	56,311	111,596	33.5	66.5

PRODUCTS.

Summary of products.—Table 49 gives the statistics in regard to the leading classes of products, quantities and values, and number of establishments reporting same, for the four census years, 1899 to 1914, inclusive.

Table 49 STEEL WORKS AND ROLLING MILLS—PRODUCTS. (Ton, 2,240 pounds).

PRODUCT.	1914	1909	1904	1899
Total value	[1]$918,664,565	[1]$985,722,534	[1]$673,965,026	$597,211,716
I. Rolled, forged, and other classified iron and steel products:				
Tons	25,522,784	26,723,274	18,218,233	15,055,626
For sale	16,904,966	18,265,891	(2)	(2)
For consumption	8,617,818	8,457,383	(2)	(2)
Value	$800,278,038	$863,342,711	$585,288,243	$510,906,040
A.—*Finished rolled products and forgings*—				
Tons	18,482,182	19,276,237	12,759,993	10,398,796
For sale	12,647,638	14,024,550	(2)	(2)
For consumption	5,834,544	5,251,687	(2)	(2)
Value	$623,485,963	$667,393,177	$447,150,695	$391,252,528
Rails—				
Number of establishments	15	13	14	15
Tons	[3]1,842,041	2,858,599	[4]2,194,605	[4]2,251,337
Value	$54,009,918	$81,128,295	$58,256,750	$46,533,159
Open-hearth—				
Tons	[5]1,522,684	1,215,072	128,681	(2)
Value	$45,336,381	$36,400,780	$3,608,562	(2)
Bessemer—				
Tons	319,357	1,643,527	2,065,024	(2)
Value	$8,673,537	$44,727,515	$54,627,488	(2)
Rerolled or renewed rails—				
Number of establishments	8	9	8	(2)
Tons	63,671	106,352	99,530	(2)
Value	$1,438,237	$2,683,017	$2,480,328	(2)
Rail fastenings (including splice bars, tie-plates, fish-plates, etc.)—				
Number of establishments	26	25	(2)	(2)
Tons	349,307	396,911	174,055	(2)
Value	$11,526,956	$14,488,412	$5,663,052	(2)
Structural shapes (not including plates used for making girders)—				
Number of establishments	35	27	(2)	(2)
Tons[6]	2,083,440	2,123,630	954,537	856,983
Value	$57,475,366	$65,564,593	$32,730,901	$29,361,522
Heavy (3-inch and over leg or web)—				
Tons	1,889,674	(2)	(2)	(2)
Value	$51,702,478	(2)	(2)	(2)
Light (less than 3-inch leg or web)—				
Tons	193,766	(2)	(2)	(2)
Value	$5,772,888	(2)	(2)	(2)
Bars for reenforced concrete—				
Number of establishments	30	25		
Tons	269,966	191,358		
Value	$7,751,549	$5,588,963		
Merchant bars, including bars or rods not elsewhere specified—				
Number of establishments	99			
Tons	2,474,737			
Value	$84,409,500		(2)	(2)
Steel—			2,442,810	2,493,159
Tons	2,062,791		$84,069,122	$100,597,221
Value	$71,352,396			
Iron—				
Tons	411,946			
Value	$13,057,104			
Spike and chain rods, bolt and nut rods, horseshoe bars, strips, etc.—		132		
		3,784,248		
		$121,488,423		
Number of establishments	41			
Tons	535,875			
Value	$18,319,865			
For sale—				
Tons	45,916			
Value	$1,570,929			
For consumption—				
Tons	489,959			
Assigned value	$16,748,936			

[1] In addition, steel castings and rolled steel valued at $2,831,964 was produced by 13 establishments in 1914; to the value of $6,627,039 by 29 establishments in 1909; and to the value of $347,264 in 1904 by establishments not classified as steelworks and rolling mills.

[2] Figures not available.

[3] Includes 27,286 tons of alloy steel rails; titanium steel, 7,395 tons; nickel-chrome steel, 4,174 tons; manganese steel, 3,864 tons; and kinds not specified, 11,853 tons.

[4] Includes iron rails; 1904, 900 tons value $20,700; 1899, 880 tons, value $31,180.

[5] Includes 1,522,362 tons of basic open-hearth, 144 tons acid open-hearth, and 178 tons of electric steel rails.

[6] Includes iron shapes as follows (balance steel): 1914, 6,344 tons; 1909, 21,330 tons; 1904, 4,475 tons; 1899, 27,091 tons.

Table 49—Continued.

PRODUCT.	STEEL WORKS AND ROLLING MILLS—PRODUCTS. (Ton, 2,240 pounds).			
	1914	1909	1904	1899
I. Rolled, forged, and other classified iron and steel products—Continued.				
A.—*Finished rolled products and forgings*—Continued.				
Wire rods—				
Number of establishments	33	29	(1)	(1)
Tons	2,377,691	2,295,279	1,792,704	916,587
Value	$61,578,145	$61,947,958	$52,995,031	$35,529,529
For sale—				
Tons	535,098	511,322	(1)	(1)
Value	$14,000,752	$14,681,108	(1)	(1)
For consumption—				
Tons	1,842,593	1,783,957	(1)	(1)
In works where produced	1,399,066	1,318,796	(1)	(1)
In other works of same company	443,527	465,161	(1)	(1)
Assigned value	$47,577,393	$47,266,850	(1)	(1)
Plates or sheets (not elsewhere specified)—				
Number of establishments	99	105	(1)	(1)
Tons	3,699,249	3,332,733	1,856,469	1,488,066
Value	$120,785,963	$133,272,393	$77,802,001	$68,109,223
For sale—				
Tons	2,907,272	2,807,114	(1)	(1)
Value	$96,442,998	$108,298,861	(1)	(1)
For consumption—				
Tons	791,977	525,619	(1)	(1)
Assigned value	$33,342,965	$24,973,532	(1)	(1)
According to gauge—				
Plates No. 12 and thicker—				
Tons	2,183,775	[2] 2,392,144	(1)	(1)
Value	$62,768,579	(1)	(1)	(1)
Sheets No. 13 and thinner—				
Tons	1,515,474	[3] 940,589	(1)	(1)
Value	$67,017,384	(1)	(1)	(1)
Black plates (or sheets) for tinning—				
Number of establishments	30	29	35	44
Tons	1,011,938	631,435	504,025	394,014
Steel	1,004,486	(1)	(1)	(1)
Iron	7,452	(1)	(1)	(1)
Value	$43,147,041	$30,955,967	$25,297,079	$20,967,806
Steel	$42,792,556	(1)	(1)	(1)
Iron	$354,485	(1)	(1)	(1)
For sale—				
Tons	81,583	56,275	(1)	(1)
Value	$3,500,576	$2,736,396	(1)	(1)
For consumption—				
Tons	930,355	575,160	(1)	(1)
Assigned value	$39,646,465	$28,219,571	(1)	(1)
Skelp, flue and pipe—				
Number of establishments	38	42	(1)	
Tons	1,960,844	2,084,286	1,557,690	
Value	$52,443,303	$64,514,728	$46,780,202	
For sale—				
Tons	506,380	580,686	(1)	
Value	$14,621,830	$18,415,604	(1)	
For consumption—				
Tons	1,454,464	1,503,600	(1)	
In works where produced	1,183,756	1,401,573	(1)	(1) 1,195,189
In other works of same company	270,708	102,027	(1)	$49,159,747
Assigned value	$37,821,473	$46,099,124	(1)	
Hoops, bands, and cotton ties—				
Number of establishments	17	15	(1)	
Tons	603,940	341,043	337,223	
Value	$19,945,078	$10,429,681	$12,760,010	
Nail and tack plate—				
Number of establishments	11	12	(1)	(1)
Tons	50,302	68,557	86,601	97,664
Value	$2,008,308	$2,540,022	$2,462,076	$3,116,558
For sale—				
Tons	19,751	25,867	(1)	(1)
Value	$803,352	$960,492	(1)	(1)
For consumption—				
Tons	30,551	42,690	(1)	(1)
Assigned value	$1,204,956	$1,579,530	(1)	(1)
Axles, rolled or forged—				
Number of establishments	10	8	(1)	(1)
Tons	[4] 89,436	102,348	83,585	102,606
Value	$3,407,271	$3,831,344	$2,875,829	$4,482,937
Armor plates, gun forgings, and ordnance—				
Number of establishments	6	5	4	(1)
Tons	38,669	26,845	24,433	15,302
Value	$19,947,893	$10,649,079	$10,549,620	$7,526,479
All other rolled products—				
Tons	619,674	566,627	377,665	506,880
Value	$37,125,670	$29,570,061	$16,743,727	$19,202,606
All forged or other iron and steel products not otherwise enumerated—				
Tons	411,402	365,986	274,061	81,009
Value	$19,165,900	$18,740,241	$15,684,967	$6,665,741
B.—*Partly finished rolled products for sale or for transfer to other works of same company*—				
Tons	6,408,030	6,799,436	4,974,511	4,375,967
Value	$130,674,909	$153,493,360	$113,552,102	$102,262,474
Blooms, billets, and slabs, steel—				
Tons	3,991,873	4,887,796	4,823,585	4,172,286
Value	$80,638,672	$108,514,747	$109,611,104	$96,321,887
For sale—				
Tons	1,414,619	1,841,819	(1)	(1)
Value	$29,706,572	$43,021,988	(1)	(1)
For consumption in other works of producer—				
Tons	2,577,254	3,045,977	(1)	(1)
Assigned value	$50,932,100	$65,492,759	(1)	(1)
Rolled blooms and billets for forging purposes—				
For sale—				
Tons	65,939	84,383	(5)	(5)
Value	$1,695,637	$2,247,133	(5)	(5)
Sheet and tin-plate bars—				
Tons	2,241,735	1,652,761	(5)	(5)
Value	$45,372,785	$37,745,269	(5)	(5)
For sale—				
Tons	2,088,769	1,625,408	(1)	(1)
Value	$42,308,755	$37,105,869	(1)	(1)
For consumption in other works of producer—				
Tons	152,966	27,353	(1)	(1)
Assigned value	$3,064,030	$639,400	(1)	(1)
Muck and scrap bar—				
Tons	108,483	174,496	150,926	203,681
Value	$2,967,815	$4,986,211	$3,940,998	$5,940,587
For sale—				
Tons	89,379	154,431	(1)	(1)
Value	$2,379,056	$4,289,969	(1)	(1)
For consumption in other works of producer—				
Tons	19,104	20,065	(1)	(1)
Assigned value	$588,759	$696,242	(1)	(1)
Made and consumed in same works, tons—				
Blooms, billets, and slabs, steel	13,102,896			
Hammered charcoal blooms, billets, and slabs	35,794	11,375,622	(1)	(1)
Rolled blooms and billets for forging purposes	68,856	76,614	(1)	(1)
Sheet and tin-plate bars	723,350	441,637	(1)	(1)
Muck and scrap bar	958,640	1,191,828	(1)	(1)
C.—*Unrolled steel (for sale or for transfer to other works of same company)*—				
Tons	632,572	647,601	483,729	280,863
Value	$46,117,166	$42,456,174	$24,585,446	$17,391,038
Ingots—				
Tons	63,371	142,745	196,404	103,707
Value	$1,383,468	$3,593,726	$3,985,310	$2,781,145
For sale—				
Tons	29,421	30,444	(1)	(1)
Value	$737,382	$1,513,445	(1)	(1)
For consumption in other works of producer—				
Tons	33,950	112,301	(1)	(1)
Assigned value	$646,086	$2,080,281	(1)	(1)
Direct steel castings—				
Tons	569,201	504,856	287,325	177,156
Value	$44,733,698	$38,862,448	$20,600,136	$14,609,893
II. Scrap steel or iron, tons	7,041,285	6,364,647	(1)	(1)
For sale—				
Tons	983,216	840,118		
Value	$11,660,297	$12,632,772		
For consumption in other works of producer—			877,177	
Tons	462,948	398,436	$11,079,831	
Assigned value	$4,674,546	$5,530,852		
Made and consumed in same works, tons	5,595,122	5,126,093	(1)	
III. All other steel or iron products, not rolled, including value added to iron and steel rolling-mill products by further manufacture	$85,238,964	$86,534,369	$61,977,284	$86,305,676
IV. All products other than steel or iron	$15,103,136	$16,356,978	$15,619,668	
Custom work and repairing	$1,709,584	$1,324,852		

[1] Figures not available.
[2] Plates 16 gauge and thicker.
[3] Sheets 17 gauge and thinner.
[4] Includes 1,160 tons of axles other than car and locomotive (automobile, carriage etc.), valued at $96,069.
[5] Included above with blooms, billets, and slabs.

The value of products as reported by steel works and rolling mills in 1914 totaled $918,664,565, a decrease of a little over $67,000,000, or 6.8 per cent from the output of 1909, but an increase of nearly $245,000,000, or 36.3 per cent over that of 1904, and of 53.9 per cent over 1899.

The great bulk of the output consists of those of Group I, designated as "rolled, forged, and other classified iron and steel products." These aggregated 25,522,784 tons in 1914, valued at $800,278,038, including those made for consumption as well as those made for sale. The figures of subgroup A, "finished rolled products and forgings," are substantially free from duplication. The total thereof in 1914 was 18,482,182 tons, valued at $623,485,963, a decrease of 4.1 per cent in quantity, and 6.6 per cent in value, as compared with 1909, but an increase of 44.9 per cent in quantity and 37.2 per cent in value, as compared with 1904.

In this connection the increase in productivity of labor, measured by tonnage output, is of interest. The tonnage output per wage earner, obtained by dividing the aggregate tonnage of rolled, forged, and other classified products by the number of wage earners, in 1899, was 56.7 tons; in 1904, 61.5 tons; in 1909, 80.3 tons; and in 1914, 74.3 tons. These figures are to be taken as showing, in general only, an increase in the productivity of labor due to improvements in processes and equipment, for they involve a diversity of products that may vary in proportions from census to census. The drop in output per wage earner in 1914 as compared with 1909 is consistent with the falling off in that year's operations.

In many rolling mills the operations are not confined to hot rolling, but more advanced products are made, such as wire, wrought-welded tubes, galvanized sheets, horseshoes, etc. Under the heading of "finished rolled products and forgings," however, are shown the total quantity and value of each class of rolled product, whether sold, transshipped to other works of the same company, or consumed in further processes of manufacture in the works where produced. Duplication in total value of products on account thereof is avoided by including in Group III of the table "all other steel or iron products;" only the value added to such rolled material by further processes of manufacture in the works, and not the total value of the products in the form in which they leave the works. The values assigned to the rolling-mill products thus used in further processes of manufacture in the same works were calculated on the basis of average values deduced from the reports of representative establishments.

Partly finished rolled products are those which are ordinarily subject to further hot rolling. All finished rolled products, except shapes rolled direct from the ingot, pass through one or another of these intermediate forms. Only the output made for sale or for transfer to other works of the producing company is given, so that there is no duplication in the figures for any given plant, although the major portion of this group represents duplication for the industry as a whole.

Unrolled steel includes ingots and direct castings. Ingots are all subjected to hot rolling or forging, and the table only includes the small amount sold or transferred to other works. The total production of steel castings is given, including those consumed in the same establishments.

There are marked differences among the several classes of products with respect to increases or decreases. Table 50 gives the percentages of increase for the several classes of products for the census periods intervening between 1899 and 1914. The products are ranked according to their importance on the basis of tonnage, 1914, taking into consideration the products which formerly were included under one head, but are now segregated.

Table 50 STEEL WORKS AND ROLLING MILLS—PRINCIPAL PRODUCTS—PER CENT OF INCREASE.[2]

CLASS.[1]	1909-1914		1904-1909		1899-1904	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Finished rolled products and forgings	−4.1	−6.6	51.1	49.3	22.7	14.3
Plates or sheets	11.0	−2.6	79.5	71.3	24.8	14.2
Merchant bars, including spike and chain rods, bolt and nut rods, horseshoe bars, etc.	−20.4	−15.4	62.7	51.2	−2.0	−16.4
Bars for reenforced concrete	41.1	38.7				
Wire rods	3.6	−0.6	28.0	16.9	95.6	49.2
Structural shapes	−1.9	−12.3	122.5	100.3	11.4	11.5
Skelp	−5.9	−18.7	33.8	37.9	58.5	21.1
Hoops, bands, and cotton ties	77.1	91.2	1.1	−18.3		
Rails	−35.6	−33.4	30.3	39.3	−10.5	25.2
Black plates for tinning	60.3	39.4	25.3	22.4	27.9	20.6
Rail fastenings	−12.0	−20.4	128.0	155.8	.....	.....
Axles	−12.6	−11.1	22.4	33.2	−18.5	−35.8
Rerolled or renewed rails	−40.1	−46.4	6.8	8.2	.....	.....
Nail and tack plate	−26.6	−20.9	−20.8	3.2	−11.3	−21.9
Armor plate, gun forgings, and ordnance	44.0	87.3	9.9	0.9	59.7	40.2
All other rolled or forged	10.6	−3.5	43.1	79.8	10.9	25.4

[1] Ranked according to tonnage. [2] A minus sign (−) denotes decrease.

The commodities which, according to the table, were least affected by the industrial depression of 1914, are hoops, bands and cotton ties, and black plates for tinning. Merchant bars show a large decrease for 1914, as compared with 1909, and rails a decrease in quantity for both the earliest and the last semidecade; and, although, there was an increase during 1904 to 1909, the ratio of increase was materially less than the average for all products.

Table 51 shows, by percentages, the distribution of the tonnage among the several classes at each of the last four censuses.

Table 51

CLASS.	STEEL WORKS AND ROLLING MILLS—PER CENT DISTRIBUTION OF TONNAGE.			
	1914	1909	1904	1899
Finished rolled products and forgings	100.0	100.0	100.0	100.0
Plates and sheets	20.0	17.3	14.5	14.3
Merchant bars, including spike and chain rods, bolt and nut rods, horseshoe bars etc.	16.3	19.6	19.1	24.0
Bars for reenforced concrete	1.5	1.0		
Wire rods	12.9	11.9	14.1	8.8
Structural shapes	11.3	11.0	7.5	8.2
Skelp	10.6	10.8	12.2	11.5
Hoops, bands, and cotton ties	3.3	1.8	2.6	
Rails	10.0	14.8	17.2	21.6
Black plates for tinning	5.5	3.3	3.9	3.8
Rail fastenings	1.9	2.1	1.4	
Axles	0.5	0.5	0.7	1.0
Rerolled or renewed rails	0.3	0.6	0.8	
Nail and tack plates	0.3	0.4	0.7	0.9
Armor plate, gun forgings and ordnance	0.2	0.1	0.2	0.1
All other rolled or forged product	5.4	4.9	5.1	5.8

Production of finished rolled products and forgings, by states.—The distribution of the 18,482,182 tons of finished rolled products and forgings in 1914 among the principal producing states is shown in Table 52, with the corresponding figures for 1909 and 1904, and the per cent distribution for the several years. A similar distribution of the total tonnage, including partially rolled and unrolled steel, would have little significance because of the variations among the states in the amount of duplication and of the fact that partly rolled products made in one state are in some cases transferred to mills in other states for further manufacture.

Table 52

STATE.	STEEL WORKS AND ROLLING MILLS—FINISHED ROLLED PRODUCTS AND FORGINGS, TONS.			PER CENT DISTRIBUTION.		
	1914	1909	1904	1914	1909	1904
United States	18,482,182	19,276,237	12,759,993	100.0	100.0	100.0
Pennsylvania	9,374,588	9,903,162	6,923,608	50.7	51.4	54.3
Ohio	3,449,352	3,097,426	1,679,272	18.7	16.1	13.0
Indiana	1,566,951	965,174	407,156	8.5	5.0	3.2
Illinois	1,451,584	2,086,120	1,301,870	7.9	10.8	10.2
New York	624,773	798,225	533,726	3.4	4.1	4.2
West Virginia	437,651	437,388	288,793	2.4	2.3	2.3
Alabama	392,969			2.1		
Colorado		925,005	651,737		4.8	5.1
Maryland	474,109			2.6		
Massachusetts	129,162	150,613	143,320	0.7	0.8	1.1
New Jersey	119,807	137,679	149,724	0.6	0.7	1.2
Wisconsin	107,173	260,226	189,269	0.6	1.3	1.5
Kentucky	94,830	127,851	143,566	0.5	0.7	1.1
California	60,221	50,931	30,466	0.3	0.3	0.2
All other states	199,012	336,437	337,486	1.1	1.7	2.6

Four states, Pennsylvania, Ohio, Indiana, and Illinois, produced 80.7 per cent of the total output of these products in 1904, 83.3 per cent in 1909, and 85.8 per cent in 1914, a progressively increasing proportion, but of these states the proportions for Pennsylvania and Illinois show decreases and those for Ohio and Indiana increases.

Table 53 shows the number of establishments in each state reporting the manufacture, in 1914 and 1909, of each of the principal classes of products.

Table 53

STEEL WORKS AND ROLLING MILLS—NUMBER OF ESTABLISHMENTS MANUFACTURING.

STATE.	Total number of establishments.		Rails.		Rerolled or renewed rails, etc.		Rail fastenings.		Structural shapes.		Merchant bars, etc.		Bars for reenforced concrete.		Wire rods.		Plates and sheets.		Black plates.		Skelp, flue, and pipe.		Hoops, bands, and cotton ties.		Axles.		Nail and tack plates.		Armor plates, gun forgings, and ordnance.		Muck and scrap bar.		Steel.		Steel ingots.		Steel castings.	
	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909
United States	427	446	15	13	8	9	26	25	35	27	117	132	29	25	33	29	99	105	32	29	39	42	17	15	10	8	11	12	6	5	96	116	211	189	113	100	129	115
Alabama	6	6	2	1					1	1	3	4	2		2		1	1					1	1							1	3	2	1	2	1	2	
California	7	5					1	1	3	2	4	3	2	1													1		1		3	3	5	2	3	1	2	1
Colorado	1	1	1	1	1	1	1	1			1	1		1	1	1												1			1		1	1	1	1	1
Connecticut	4	5									2	2		1							1	1								1	2	2	2	1	1	1	1
Delaware	5	5															1	2														4	3			4	3
District of Columbia	1	1																											1	1		1	1	1	1		
Georgia	1	1					1				1	1	1	1	1	1							1	1								1	1	1	1		
Illinois	25	24	1	1			1	2	4	3	1	11	9	2	3	3	3	2	1	1	1	1		2				1			6	6	14	12	8	6	8	8
Indiana	19	17	1	1			1	3		4	1	7	7	4	3	2	2	6	6	1	1			1	1	1		1			7	6	7	4	2	2	6	3
Kentucky	6	7									1	2		2	1	1	2	2									1	1			1	2	2	2	2			1
Maine	1	1									1	1		1																	1	1						
Maryland	3	5	1	1	1	1						1							1	1												1	2	2	2	2		
Massachusetts	11	9									2	1			1	1							1	1			1	1			1	1	8	6	2	2	7	5
Michigan	9	8									2	2																					6	5			6	5
Minnesota	1	1																															1	1			1	1
Missouri	3	4									1	2	1	1			1	1													1	2	1	1		1	1
New Jersey	15	16							1		5	6	1	1	2	2															4	4	8	8	5	3	4	5
New York	24	25	1	1			2	2	1	1	9	12	2	2	2	2	5	4			1	1			1	1					7	8	13	13	7	7	7	7
Ohio	70	75	1	1	1	1	3	3	4	3	11	15	4	4	6	6	26	28	8	6	9	7	2	2	1		1				9	14	30	27	16	14	18	16
Oklahoma	1										1																				1							
Oregon	1	2										1																				1	1	1		1	1
Pennsylvania	178	189	6	6	3	2	11	8	18	17	48	51	8	3	11	9	48	52	14	14	24	29	9	9	7	5	6	6	4	3	47	53	85	79	56	52	46	42
Rhode Island	3	2									1	1			1	1															1	1	2	1	1	1	1	
Tennessee	1	1									1	1																			1	1						
Texas	1	1									1	1																				1						
Virginia	2	3					1	1			2	3																			1	2						
Washington	1	1			1	1	1	1			1	1	1	1																	1	1						
West Virginia	15	16			1	1						2					7	8	7	6	3	4					2	1			1	2	4	3	3	3	2	1
Wisconsin	12	14	1				1	1	1	1	1	1	1	1							1												11	13			11	13
Wyoming		1							1			1																				1						

Detail statistics of the quantity or value of all classes of products can not be given, as to do so would in many cases disclose the operations of individual establishments. It may be noted, however, that in 1914 Pennsylvania produced 30.7 per cent of the tonnage of rails, as compared with 29.7 in 1909, 37 in 1904, and more than 50 in 1899. It produced 72 per cent of all structural steel in 1914, as compared with 76 in 1909 and 86.6 in 1904; 46.4 per cent of the wire-rod tonnage in 1914, as compared with 37.5 in 1909 and 33.3 in 1904; and 51.4 per cent of the plates and sheets in 1914, as compared with three-fifths in 1909 and over two-thirds in 1904. Of the skelp Pennsylvania reported 43.9 per cent in 1914 and Ohio about one-third; and Pennsylvania produced 61.8 per cent of the hoops, bands, and cotton ties and 62.3 per cent of the nail and tack plates.

Disposition of finished rolled products.—The finished rolled products as given in Table 47 represent the total output inclusive of that which is worked up into more highly finished forms in the establishment where made. Table 54 shows the proportion that was consumed in 1914 in the works in which rolled, the proportion transferred to other works of the same company, and that sold.

Table 54

STEEL WORKS AND ROLLING MILLS—FINISHED ROLLED PRODUCTS AND FORGINGS: 1914.

CLASS.	Total (shown in Table 49).		For consumption in works where produced.			For transfer to other works of same company.			For sale.		
			Tonnage.			Tonnage.			Tonnage.		
	Tonnage.	Value.	Amount.	Per cent of class total.	Assigned value.	Amount.	Per cent of class total.	Assigned value.	Amount.	Per cent of class total.	Value.
All finished rolled products and forgings	18,482,182	$623,485,963	4,079,112	22.1	$124,647,927	1,755,432	9.5	$62,277,390	[1] 12,647,638	68.4	[1] $436,560,646
Rails	1,842,041	54,009,918							[1] 1,842,041		[1] 54,009,918
Rerolled or renewed rails	63,671	1,438,237							63,671		1,438,237
Rail fastenings	349,307	11,526,956							[1] 349,307		[1] 11,526,956
Structural shapes	2,083,440	57,475,366							[1] 2,083,440		[1] 57,475,366
Bars for reenforced concrete	269,966	7,751,549							[1] 269,966		[1] 7,751,549
Merchant bars	2,474,737	84,409,500	146,007	5.9	5,017,469	27,335	1.1	1,424,171	2,301,395	93.0	77,967,860
Spike and chain rods, bolt and nut rods, horseshoe bars, etc	535,875	18,319,865	486,644	90.8	16,648,091	3,315	0.6	100,845	45,916	8.6	1,570,929
Wire rods	2,377,691	61,578,145	1,399,066	58.8	36,123,884	443,527	18.7	11,453,509	535,098	22.5	14,000,752
Plates and sheets	3,699,249	129,785,963	766,042	20.7	31,923,467	25,935	0.7	1,419,498	2,907,272	78.6	96,442,998
Black plates or sheets for tinning	1,011,938	43,147,041				930,355	91.9	39,646,465	81,583	8.1	3,500,576
Skelp, flue and pipe	1,960,844	52,443,303	1,183,756	60.4	30,777,656	270,708	13.8	7,043,817	506,380	25.8	14,621,830
Hoops, bands, and cotton ties	603,940	19,945,078							603,940		19,945,078
Nail and tack plates	50,302	2,008,308	29,622	58.9	1,184,880	929	1.8	20,076	19,751	39.3	803,352
Axles	89,436	3,407,271							[1] 89,436		[1] 3,407,271
Armor plates, gun forgings, and ordnance	38,669	19,947,893							38,669		19,947,893
All other	1,031,076	56,291,570	67,975	6.6	2,972,480	53,328	5.2	1,169,009	909,773	88.2	52,150,081

[1] Includes some products consumed by the producing company, total amount 67,381 tons, estimated value $1,943,879.

Of the total production of finished rolled forms and forgings in 1914, 22.1 per cent of the tonnage was for use in the same works, 9.5 per cent was transferred to other works of the producing company, and 68.4 per cent was for sale. A very large proportion of the output of skelp, black plates, and wire rods, and a considerable proportion of some of the other rolled products were used in the producing establishments, or transferred for further manufacture to other works of the same company. The black plates reported as transferred to other works of the same company are chiefly taken over by the tinning departments of the black-plate rolling mills.

Total production and disposition of unrolled and partly rolled products.—Table 55 shows, for 1914, the total production of the specified intermediate products, the quantity produced and consumed in the same works, the quantity and assigned value of that transferred to other works of the same company, and the quantity and value of that produced for sale.

Table 55

STEEL WORKS AND ROLLING MILLS—PARTLY FINISHED PRODUCTS: 1914.

CLASS.	Total (tons).	For consumption in works where produced (tons).	For sale or transfer to other works.					
			Total (shown in Table 49).		For transfer to other works of same company.		For sale.	
			Tons.	Value.	Tons.	Assigned value.	Tons.	Value.
Partly finished rolled products	21,297,566	14,889,536	6,408,030	$130,674,909	2,749,324	$54,584,889	3,658,706	$76,090,020
Blooms, billets, and slabs, steel	17,094,769	13,102,896	3,991,873	80,638,672	2,577,254	50,932,100	1,414,619	29,706,572
Hammered charcoal blooms, billets, and slabs	35,794	35,794						
Rolled blooms or billets for forging purposes	134,795	68,856	65,939	1,695,637			65,939	1,695,637
Sheet or tin-plate bars	2,965,085	723,350	2,241,735	45,372,785	152,966	3,064,030	2,088,769	42,308,755
Muck and scrap bar	1,067,123	958,640	108,483	2,967,815	19,104	588,759	89,379	2,379,056
Unrolled steel	23,383,474	22,758,495	624,979	45,591,376	33,950	646,086	591,029	44,945,290
Ingots	22,814,273	22,750,902	63,371	1,383,468	33,950	646,086	29,421	737,382
Direct castings	569,201	7,593	[1] 561,608	[1] 44,207,908			561,608	44,207,908

[1] Exclusive of 7,593 tons, valued at $525,790, consumed in works where produced, which are included in Table 49.

The value of the products credited to the industry—$918,664,565 in 1914 and $985,722,534 in 1909—includes products which were transferred from one establishment to another controlled by the same company, for use as material in the latter, these transferences having an assigned value of $122,314,580 in 1914 and $121,774,742 in 1909. Deducting these interplant duplications, the value of the products, as marketed, was $796,349,985 in 1914 and $864,247,792 in 1909, a decrease of nearly $63,000,000. This decrease results principally from a large decrease in finished rolled steel, chiefly in rails, rail fastenings, structural shapes, and merchant bars.

Summary as to disposition of products and quantity and value of products in condition in which marketed.—In Table 49 the data presented from the rolling mill standpoint and the quantities and values of the finished rolled products include those that undergo further processes of manufacture in the same works. Table 56 shows, for 1914 and 1909, the value of the products in the condition in which sold. It contains no duplication, due to the use of one product as material for further manufacture in the same plant or in another plant, controlled by the same company; though it does contain that due to the purchase of partly finished products by independent concerns.

Table 56

CLASS.	Census year.	STEEL WORKS AND ROLLING MILLS—PRODUCTS.						
		Total (tons).	For consumption in works where produced (tons).	For transfer to other works of same company.		In form and condition for sale.		
				Tons.	Assigned value.	Tons.	Value.	
							Amount.	Per cent of total.
Total	1914	.....	.....	.....	$122,314,580	.....	$796,349,985	100.0
	1909	.....	.....	.....	121,474,742	.....	864,247,792	100.0
Finished rolled products and forgings	1914	18,482,182	4,146,493	1,755,432	62,277,390	12,580,257	434,616,767	54.6
	1909	19,276,237	4,045,272	1,206,415	47,035,208	14,024,550	491,997,011	56.9
Partly finished rolled products	1914	6,408,030	.....	2,749,324	54,584,889	3,658,706	76,090,020	9.6
	1909	6,799,436	.....	3,093,395	66,828,401	3,706,041	86,664,959	10.0
Steel ingots and castings [1]	1914	23,383,474	[2] 22,758,495	33,950	646,086	591,029	44,945,290	5.6
	1909	23,473,718	[2] 22,883,167	112,301	2,080,281	478,250	36,213,639	4.2
Manufactures from rolling-mill products	1914	.....	.....	.....	.....	.....	206,909,945	26.0
	1909	.....	.....	.....	.....	.....	213,537,183	24.7
Scrap steel and iron	1914	7,041,286	5,595,122	462,948	4,674,546	983,216	11,660,297	1.4
	1909	6,364,647	5,126,093	398,436	5,530,852	840,118	12,632,772	1.5
Castings, other than direct steel castings	1914	116,536	.....	.....	.....	116,536	5,314,946	0.7
	1909	128,670	.....	.....	.....	128,670	5,520,399	0.6
Products, other than steel and iron and custom work and repairing	1914	.....	.....	.....	(3)	.....	16,812,720	2.1
	1909	.....	.....	.....	(3)	.....	17,681,830	2.1

[1] Not including steel made by establishments not classified as steel works and rolling mills.
[2] Includes castings used by the companies producing and in other tables credited to products with value: 1914, 7,593 tons, estimated value, $525,790; 1909, 57,050 tons, estimated value, $4,162,254.
[3] Included with products "in form and condition for sale."

Manufactures from iron and steel rolling-mill products made in rolling mills.—There is given in Table 57 statistics in regard to the principal products made in rolling-mill establishments from rolled material, in 1914, 1909, and 1904, together with the production, so far as ascertainable, of like products by establishments not affiliated with rolling mills. The tin-plate dipping departments of rolling mills are treated as belonging to a separate industry.

Table 57

KIND.	STEEL WORKS AND ROLLING MILLS—MANUFACTURES FROM ROLLING-MILL PRODUCTS.			PER CENT OF INCREASE.[1]	
	1914	1909	1904	1909–1914	1904–1909
Manufactures from iron and steel rolling-mill products, made in rolling mills, total value	$206,909,945	$213,537,183	$139,241,015	—3.1	53.4
Wire departments of rolling mills—steel and iron wire and manufactures thereof	$67,353,214	$71,624,024	$67,551,443	—6.0	6.0
Pipes and tubes, not including cast pipe:					
Made in rolling mills—					
Wrought welded—					
Number of establishments	13	15	14	.....	.....
Tons	1,130,652	1,314,771	849,047	—14.0	54.9
Value	$55,461,650	$68,471,573	$43,985,728	—19.0	55.7
Pipes and tubes, not including cast pipe—Contd.					
Made in rolling mills—Con.					
Seamless, hot finished or cold drawn—					
Number of establishments	5	4	[2]	.....	.....
Tons	64,765	54,273		19.3	
Value	$5,821,467	$5,650,739		3.0	
All other, clinched, riveted, etc.—			$2,290,234	.....	189.8
Tons	17,345	17,561		—1.2	
Value	$834,209	$986,699		—15.5	
Not made in rolling mills—					
Number of establishments	36	28	27	.....	.....
Value of all products	$37,655,229	$30,886,270	$17,400,912	21.9	77.5

[1] A minus sign (—) denotes decrease.
[2] Figures not available.

Table 57—Continued

KIND.	STEEL WORKS AND ROLLING MILLS—MANUFACTURES FROM ROLLING-MILL PRODUCTS.			PER CENT OF INCREASE.[1]	
	1914	1909	1904	1909–1914	1904–1909
Bolts, nuts, rivets, washers, etc.:					
Made in rolling mills—					
Number of establishments	28	35	30		
Kegs (200 pounds)	2,091,533	[2] 4,471,985	[2] 3,105,827		
Value	$9,682,385	$20,538,858	$13,854,635		
Not made in rolling mills—					
Number of establishments	102	108	88		
Value of all products	$23,403,405	$24,484,907	$14,687,108	−4.4	66.7
Railroad spikes:					
Made in rolling mills—					
Number of establishments	15				
Kegs (200 pounds)	1,366,177	([3])	([3])		
Value	$4,201,388				
Nails and spikes:					
Made in rolling mills—					
Cut—					
Number of establishments	10	12	17		
Kegs (200 pounds)	740,436	1,009,319	1,311,549	−26.6	−23.0
Value	$1,469,780	$2,218,207	$2,394,108	−33.7	−7.3
Forged nails and spikes (other than railroad spikes)—					
Number of establishments	5				
Kegs (100 pounds)	45,936	([3])	([3])		
Value	$92,783				
All other, including tacks (other than wire nails and tacks)—					
Kegs (100 pounds)	29,916	([4])	([4])		
Value	$62,161	([4])	([4])		
Wire nails and spikes, made in rolling mills[5] and wire-drawing mills—					
Kegs (100 pounds)	12,886,634	13,926,861	[6] 12,587,512	−7.5	10.6
Value	$23,368,633	$27,575,774	$24,300,351	−15.3	13.5
Wire brads, tacks, and staples, made in rolling mills[5] and wire-drawing mills—					
Tons	33,335	28,125	([4])	18.5	
Value	$1,324,948	$1,324,170	([4])	0.1	
Nails and spikes—Continued.					
Not made in rolling mills (nails and spikes)—					
Number of establishments	64	57	76		
Value of all products	$7,198,600	$8,191,820	$8,922,896	−12.1	−8.2
Establishments whose chief product is—					
Cut nails	$1,735,979				
Wire nails	$1,334,432	([4])	([4])		
All other, including tacks	$4,128,189				
Horse and mule shoes:					
Made in rolling mills—					
Number of establishments	11	11	11		
Kegs (200 pounds)	1,015,230	996,383	768,253	1.9	29.7
Value	$7,122,462	$7,202,897	$5,483,137	−1.1	31.4
Not made in rolling mills—					
Number of establishments	22	19	8		
Value of all products	$1,785,993	$1,014,576	$798,981	76.0	27.0
Springs, not including wire springs:					
Made in rolling mills—					
Number of establishments	7	6	9		
Tons	11,889	6,191	22,022	92.0	−71.9
Value	$872,863	$374,924	$1,708,632	132.8	−78.1
Not made in rolling mills—					
Number of establishments	84	54	52		
Value of all products	$11,594,992	$9,005,362	$5,740,836	28.8	56.9
Galvanized plates or sheets:					
Number of establishments	26	22	([4])		
Tons	971,189	431,658	([4])	125.0	
Value	$42,862,394	$25,912,056	([4])	65.4	
Stamped ware made in rolling mills:					
Tons	36,844	24,612	([4])	49.7	
Value	$3,205,627	$2,296,707	$292,923	39.6	684.0
Steel cars, machinery, switches, frogs, etc	$7,342,690	$7,720,178	([4])	−4.9	
Shovels, spades, scoops, etc	$524,872	$540,321	$410,500	−2.9	31.6

[1] A minus sign (−) denotes decrease.
[2] Includes forged spikes.
[3] Included with "bolts, nuts, rivets, washers, etc."
[4] Figures not available.
[5] Included above under "wire departments of rolling mills."
[6] Production as given in Abstract of the Census of Manufactures, Table 71, page 109, is product of rolling mills only.

Wire and wire products.—Wire rods were rolled by 33 establishments in 1914 and by 29 in 1909, and of these, 24 in 1914 and 23 in 1909 drew wire in connection with rolling mills. The value of the steel and iron wire and manufactures thereof made in rolling mill plants in 1914 was $67,353,214, and it represents 7.3 per cent of the total value of the products of the rolling mills. In 1909 the value of similar iron and steel wire products was $71,624,024, equal, also, to 7.3 per cent of total value of the products. Reference should be made to the report on wire for detail figures of wire products.

Other manufactures from rolling-mill products.—Other manufactures largely made in the mills that roll the steel therefor are pipes and tubes, bolts, nuts, railroad spikes, nails and spikes, horseshoes, springs, galvanized plates and sheets, stamped ware, etc., cars, machinery, switches, frogs, etc., and shovels, scoops, and spades. The table gives the number of establishments making the several lines of products, the production by independent plants, and the total production in cases where full data are available. In stating the number of establishments, other than rolling mills, making each class of products, only those producing same as their chief product are included, but the quantities and value given include the product of establishments engaged principally in other lines of manufacture, but which incidentally make the specified articles.

Copper rods.—Three of the rolling mills reported the rolling in 1914 of 11,560 net tons of copper rods, of which 684 tons were for sale and 10,876 tons for use in the wire-drawing departments of the rolling plants, or in wire mills under the same ownership. In 1909 the output of copper rods by the wire and steel rolling mills was 17,809 net tons.

STEEL PRODUCTION.

Summary.—Table 58 gives the steel production, by kinds, for the years 1914, 1909, 1904, and 1899, with the percentages of increase and of distribution. It includes steel made and consumed, as well as that made for sale and for shipment to other works of the producing company, and also steel made in establishments engaged primarily in other lines of manufacture, and which are not included in the general tables for the classified industry. There has been a progressive increase in both the absolute and relative amount of basic open-hearth steel, and a decrease in Bessemer steel.

Table 58

KIND.	STEEL PRODUCTION (TONS, 2,240 lbs.).				PER CENT OF INCREASE.[1]			PER CENT DISTRIBUTION.			
	1914	1909	1904	1899	1909–1914	1904–1909	1899–1904	1914	1909	1904	1899
Total	[2] 23,403,957	[2] 23,523,199	[2] 13,670,592	10,685,000	−0.5	72.1	27.9	100.0	100.0	100.0	100.0
Open-hearth	17,081,375	14,228,377	5,820,397	3,044,356	20.1	144.0	91.2	73.0	60.5	42.6	28.5
Basic	16,234,626	13,221,093	5,064,592	2,,153,835	22.7	161.0	135.0	69.4	56.2	37.0	20.2
Acid	846,749	1,007,284	755,805	890,521	−15.9	33.3	−15.1	3.6	4.3	5.5	8.3
Bessemer	6,219,304	9,180,133	7,768,915	7,532,028	−32.3	18.2	3.1	26.6	39.0	56.8	70.5
Crucible	81,685	100,263	80,059	104,393	−18.5	25.2	−23.3	0.3	0.4	0.6	1.0
Electric and all other	21,593	14,426	1,221	4,223	49.7	.....	−71.1	0.1	0.1	[3]	[3]
Ingots	22,815,266	22,973,964	13,379,083	10,507,844	−0.7	71.7	27.3	100.0	100.0	100.0	100.0
Open-hearth	16,551,427	13,725,783	5,548,396	2,878,827	20.6	147.0	92.7	72.4	59.7	41.5	27.4
Basic	15,933,420	12,952,840	4,974,921	2,117,311	23.0	160.0	135.0	69.8	56.4	37.2	20.1
Acid	618,007	772,943	573,475	761,516	−20.0	34.8	−24.7	2.7	3.4	4.3	7.2
Bessemer	6,175,867	9,145,668	7,754,488	7,528,267	−32.4	17.9	3.0	27.1	39.8	58.0	71.6
Crucible	72,765	90,242	76,199	100,750	−19.4	18.4	−24.4	} 0.4	0.4	0.6	1.0
Electric and all other	15,207	12,271	.....	.....	23.9	.....	.....				
Castings	588,691	549,235	291,509	177,156	7.2	88.4	64.5	100.0	100.0	100.0	100.0
Open-hearth	529,948	502,594	272,001	165,529	5.4	84.8	64.3	90.0	91.5	93.3	93.4
Basic	301,206	268,253	89,671	36,524	12.3	199.0	146.0	51.2	48.8	30.8	20.6
Acid	228,742	234,341	182,330	129,005	−2.4	28.5	41.3	38.8	42.7	62.5	72.8
Bessemer	43,437	34,465	14,427	3,761	26.0	139.0	284.0	7.4	6.3	4.9	2.1
Crucible	8,920	10,021	3,860	3,643	−11.0	160.0	6.0	1.5	1.8	1.3	2.1
Electric and all other	6,386	2,155	1,221	4,223	196.3	76.5	−71.1	1.1	0.4	0.4	2.4

[1] A minus sign (−) denotes decrease.
[2] Includes steel produced by establishments not classified as "steel works and rolling mills," as follows: 1914—20,483 tons, including open-hearth 18,090 (basic 1,527, acid 16,563), Bessemer 499, and crucible 1894; 1909—49,481 tons, including open-hearth 36,099 (basic 10,674, acid 25,425), Bessemer 6,066, crucible and miscellaneous 7,316; 1904—4,184 tons, including open-hearth (basic) 2,440, Bessemer 774, crucible and miscellaneous, 970.
[3] Less than one-tenth of 1 per cent.

Production, by states.—Steel production, by states, is given in Table 59 for the census years 1899 to 1914, inclusive, with percentages of distribution, and the distribution of the production by kinds—open-hearth, Bessemer, and crucible and other kinds of steel—for the years 1914 and 1909. States for which data can not be shown separately without disclosing the operation of individual establishments are included under "all other states." The states among these in 1914 with a production in excess of 100,000 tons of steel are Alabama, Colorado, Maryland, and Kentucky, named according to tonnage. The table shows progressive decreases in the distribution percentages for Pennsylvania and Illinois and gains for Ohio and Indiana.

Table 59

STATE.	STEEL PRODUCTION (TONS, 2,240 lbs.).								OPEN-HEARTH STEEL.		BESSEMER STEEL.		CRUCIBLE, ELECTRIC, AND MISCELLANEOUS.	
	1914	1909	1904	1899	Per cent distribution.[1] 1914	1909	1904	1899	1914	1909	1914	1909	1914	1909
Total	23,403,957	23,523,199	13,670,592	10,685,000	100.0	100.0	100.0	100.0	17,081,375	14,228,377	6,219,304	9,180,133	103,278	114,689
Illinois	1,770,753	2,671,087	1,555,198	1,460,710	7.6	11.4	11.4	13.7	891,336	1,020,208	867,804	1,632,758	11,613	18,121
Indiana	1,662,839	779,778	81,589	51,967	7.1	3.3	0.6	0.5	1,662,441	779,598	.....	.....	398	180
Michigan	6,245	10,450	2,500	4,575	(1)	(1)	(1)	(1)	2,819	9,279	1,645	.....	1,781	1,171
New Jersey	140,495	95,851	68,288	62,832	0.6	0.4	0.5	0.6	127,285	79,742	7,414	6,660	5,796	9,449
New York	745,441	1,115,250	474,258	23,832	3.2	4.8	3.5	0.2	603,642	499,718	119,998	599,598	21,801	15,934
Ohio	5,451,508	4,713,869	2,529,997	1,812,829	23.3	20.0	18.5	17.0	2,591,062	1,383,725	2,860,129	3,327,859	317	2,285
Pennsylvania	11,851,400	12,206,608	7,733,640	6,431,297	50.6	51.9	56.6	60.2	9,754,523	9,295,459	2,039,274	2,849,112	57,603	62,037
Wisconsin	18,604	21,888	9,215	2,297	0.1	0.1	0.1	(1)	12,435	16,280	4,302	2,859	1,867	2,749
All other states[2]	1,756,672	1,908,418	1,215,707	834,661	7.5	8.1	8.9	7.8	1,435,832	1,144,368	318,738	761,287	2,102	2,763

[1] Less than one-tenth of 1 per cent.
[2] Includes Alabama, Colorado, Maryland, Kentucky, Massachusetts, Georgia, West Virginia, California, Connecticut, Missouri, Rhode Island, Delaware, District of Columbia, Oregon, and Minnesota, in the order named as to production in 1914.

Production for consumption and for sale.—Table 60 gives the distribution of steel tonnage as a total and for the several kinds, according to that made for sale and that made for consumption by the producing company in the works where produced and in other works of the producing company.

The 600,067 tons of steel produced for sale in 1914 comprises 570,581 tons of castings and 29,486 tons of ingots. In 1909 the steel made for sale comprised 458,915 tons of castings and 31,244 tons of ingots.

The Bessemer steel made in 1914 included 36,495 tons made in converters other than standard Bessemer. Of this production, 24,713 tons were made in Tropenas converters and 11,782 tons in those of other special types. In 1909 the product of the converters other than standard Bessemer, was 23,447 tons and in 1904, 11,834 tons.

Duplex steel.—A production of 401,621 tons of duplex steel, metal partly finished in Bessemer converters and finished in basic open-hearth furnaces, was reported by four establishments, two located in Pennsylvania and one each in Alabama and New York. In 1909 the production of duplex steel amounted to 522,682 tons.

Table 60

KIND.	Census year.	STEEL PRODUCTION (TONS, 2,240 LBS.). Total.	For consumption by producing companies. Total.	In works where produced.	For transfer to other works of same company.	For sale.
Total	1914	23,403,957	22,803,890	[1] 22,769,940	33,950	[2] 600,067
	1909	23,523,199	23,033,040	22,920,739	112,301	490,159
Open-hearth	1914	17,081,375	16,540,828	16,508,741	32,087	540,547
	1909	14,228,377	13,781,534	13,709,101	72,433	446,843
Basic	1914	16,234,626	15,908,628	15,876,624	32,004	325,998
	1909	13,221,093	12,977,845	12,908,030	69,815	243,248
Acid	1914	846,749	632,200	632,117	83	214,549
	1909	1,007,284	803,689	801,071	2,618	203,595
Bessemer	1914	6,219,304	6,175,855	6,174,094	1,761	43,449
	1909	9,180,133	9,148,539	9,108,813	39,726	31,594
Crucible	1914	81,685	72,034	71,932	102	9,651
	1909	100,263	88,890	88,748	142	11,373
Electric and all other	1914	21,593	15,173	15,173	.....	6,420
	1909	14,426	14,077	14,077	.....	349

[1] Includes 22,751,830 tons of ingots and 18,110 tons of castings, the latter distributed as follows: Basic O-H, 716 tons; acid O-H, 16,560 tons; and crucible, 834 tons.

[2] Includes 29,486 tons of ingots and 570,581 tons of castings, the latter distributed as follows: Basic O-H, 300,490 tons; acid O-H, 212,182 tons; Bessemer, 43,437 tons; crucible, 8,086 tons; and electric and all other, 6,386 tons.

Alloy steel.—The production of alloy steel, by kinds, is given in Table 61. The census schedule did not indicate any limitation as to the percentage of alloy metal necessary to constitute an alloy steel, and the returns do not show the alloy percentages.

Table 61

KIND.	ALLOY STEEL. 1914	1909
Number of establishments	57	36
Production, tons	305,956	158,216
Open-hearth	264,100	100,335
Basic	230,408	86,242
Acid	33,692	14,093
Bessemer	9,146	45,324
Crucible and electric	32,710	12,557
Ingots	294,128	151,300
Castings	11,828	6,916
By kind of alloy:		
Nickel-chrome	102,562	26,929
Nickel	69,955	37,607
Chrome	23,258	11,269
Nickel-chrome-vanadium	14,123	9,280
Chrome-vanadium	9,280	4,406
Titanium	8,477	40,477
Tungsten	4,204	1,697
Copper	2,759	.....
Vanadium	2,565	8,039
Chrome-tungsten-vanadium	2,334	(1)
Silicon-manganese	2,240	(1)
Chrome-tungsten	1,546	600
Chrome-nickel-titanium	1,106	(1)
Miscellaneous	233	17,912
Unclassified	61,314	

[1] Figures not available.

The production of 305,956 tons in 1914 was an increase of 93.4 per cent over that of 1909. The 57 establishments reporting the production of alloy steel in 1914 are distributed, by states, as follows: Pennsylvania, 32; New York, 7; Ohio, 5; Wisconsin, 4; New Jersey, 3; Illinois, 2; and 1 each in Connecticut, Delaware, Indiana, and Rhode Island. The output includes 27,286 tons of rails which are included in the rail statistics. These alloy rails comprised 7,395 tons of titanium steel, 4,174 tons of nickel-chrome steel, 3,864 tons of manganese steel, and 11,853 tons of alloy steel, not specified.

CAPACITY AND EQUIPMENT.

Steel works.—Table 62 gives, by states, the daily capacity in tons of steel on double turn, of all active plants in 1914, the steel production, the per cent distribution of capacity, and production for the year. Computed from daily capacity on a basis of 300 working days, double turn, the total yearly capacity was approximately 44,400,000 tons in 1914, as compared with 33,000,000 tons in 1909 and 23,500,000 tons in 1904. The steel production in 1914 was equal to 52.7 per cent of the computed capacity, as compared with 72 in 1909, 58 in 1904, and 66 in 1899.

Table 62

STATE	CAPACITY AND PRODUCTION. Daily capacity, tons of steel.	Steel production, tons.	PER CENT DISTRIBUTION. Capacity.	Production.
United States	148,084	23,403,957	100.0	100.0
Pennsylvania	71,612	11,851,409	48.4	50.6
Ohio	27,686	5,451,508	18.7	23.3
Illinois	13,796	1,770,753	9.3	7.6
Indiana	8,582	1,662,859	5.8	7.1
New York	6,701	745,441	4.5	3.2
Alabama	5,395	(1)	3.6	(1)
Maryland	3,925	(1)	2.7	(1)
Colorado	3,560	(1)	2.4	(1)
West Virginia	1,775	(1)	1.2	(1)
Kentucky	1,225	(1)	0.8	(1)
New Jersey	1,009	140,495	0.7	0.6
Wisconsin	650	18,604	0.4	0.1
Massachusetts	670	(1)	0.4	(1)
Missouri	306	(1)	0.2	(1)
California	315	(1)	0.2	(1)
Connecticut	275	(1)	0.2	(1)
Georgia	185	(1)	0.1	(1)
Delaware	176	(1)	0.1	(1)
Michigan	131	6,245	0.1	(2)
Rhode Island	191	(1)	0.1	(1)
All other states	69	[3] 1,756,672	.....	7.5

[1] Included under "all other states."

[2] Less than one-tenth of 1 per cent.

[3] The product of states reporting 17,856 tons daily capacity.

Open-hearth furnaces.—The statistics in regard to open-hearth furnaces—number of establishments equipped therewith and the number and capacity of the furnaces—are given, by states, in Table 63. The equipment of the establishments in other lines of industry which make steel as a subsidiary product is included.

The growth is chiefly in basic furnaces. They constituted 91.5 per cent of the aggregate open-hearth furnace capacity in 1914, as compared with 89.1 per cent in 1909, 78.3 in 1904, and 33.4 in 1899.

In 1879 the open-hearth furnaces ranged from 7 to 10 tons capacity per heat. In 1889 some 30-ton furnaces were in use; in 1899 there were many 50-ton furnaces and one of 75 tons; in 1909 the maximum had reached 125 tons; and in 1914, 250 tons capacity per heat or melt. The distribution by size groups, is given in Table 64, for 1914 and 1909.

Table 63

STATE.	Census year.	OPEN-HEARTH STEEL FURNACES. Total. Number of establishments.	Total. Number.	Total. Daily capacity (tons).	Basic. Number of establishments.	Basic. Number.	Basic. Daily capacity (tons).	Acid. Number of establishments.	Acid. Number.	Acid. Daily capacity (tons).
United States	1914	140	864	93,650	99	706	85,471	66	158	8,179
	1909	129	706	62,161	82	553	55,392	70	153	6,769
	1904	110	489	34,398	64	341	26,932	65	143	7,466
Pennsylvania	1914	66	488	51,071	45	383	45,689	38	105	5,382
	1909	62	438	38,345	36	332	33,300	40	106	5,045
	1904	54	308	23,195	28	205	17,597	38	103	5,598
Ohio	1914	20	112	13,087	16	104	12,561	5	8	526
	1909	17	68	6,370	14	60	5,986	6	8	384
	1904	12	43	2,942	9	34	2,404	6	9	538
Indiana	1914	6	62	8,570	2	54	8,200	4	8	370
	1909	5	39	5,638	2	34	5,462	3	5	176
	1904	4	9	484	1	4	400	3	5	84
Illinois	1914	10	60	6,608	9	56	6,345	3	4	263
	1909	7	48	3,994	7	47	3,934	1	1	60
	1904	9	38	2,131	7	33	1,894	3	5	237
New York	1914	8	33	3,712	4	25	3,392	4	8	320
	1909	8	27	1,998	5	20	1,791	3	7	207
	1904	6	17	965	4	11	739	2	6	226
Alabama	1914	2	15	3,195	2	15	3,195	....	....	....
	1909	1	6	1,120	1	6	1,120	....	....	....
	1904	4	18	1,390	4	18	1,390	....	....	....
Maryland	1914	2	8	1,825	2	8	1,825	....	....	....
	1909	1	2	87	1	2	87	....	....	....
	1904	1	2	100	1	2	100	....	....	....
Colorado	1914	1	15	1,500	1	15	1,500	....	....	....
	1909	1	12	1,200	1	12	1,200	....	....	....
	1904	1	6	600	1	6	600	....	....	....
New Jersey	1914	5	18	752	4	9	491	4	9	261
	1909	6	15	709	4	9	499	4	6	270
	1904	4	13	825	3	9	558	3	4	267
Kentucky	1914	1	6	625	1	5	500	1	1	125
	1909	1	4	333	1	3	250	1	1	83
	1904	....	....	....	....	....	....	....	....	....
Massachusetts	1914	3	10	570	2	5	297	2	5	273
	1909	5	15	825	2	6	555	4	9	270
	1904	3	12	635	2	5	410	2	7	225
Wisconsin	1914	2	5	510	....	....	....	2	5	510
	1909	4	6	179	2	2	78	2	4	101
	1904	3	3	25	....	....	....	3	3	25
Missouri	1914	1	8	306	1	8	306	....	....	....
	1909	1	8	378	1	8	378	....	....	....
	1904	1	5	160	1	5	160	....	....	....
California	1914	4	6	300	4	6	300	....	....	....
	1909	1	1	8	....	....	....	1	1	8
	1904	1	1	20	....	....	....	1	1	20
West Virginia	1914	2	4	285	1	3	245	1	1	40
	1909	1	2	170	1	2	170	....	....	....
	1904	....	....	....	....	....	....	....	....	....
Connecticut	1914	1	3	250	1	3	250	....	....	....
	1909	2	4	270	1	3	250	1	1	20
	1904	3	6	370	1	3	230	2	3	140
Georgia	1914	1	2	185	1	2	185	....	....	....
	1909	1	2	160	1	2	160	....	....	....
	1904	....	....	....	....	....	....	....	....	....
Delaware	1914	2	4	109	....	....	....	2	4	109
	1909	1	2	75	....	....	....	1	2	75
	1904	1	5	460	1	4	360	1	1	100
All other states	[1] 1914	3	5	190	3	5	190	....	....	....
	1909	4	7	242	3	5	172	1	2	70
	1904	2	3	96	2	3	96	....	....	....

[1] Comprises District of Columbia, Michigan, and Rhode Island.

Table 64

SIZE GROUP.	OPEN-HEARTH STEEL FURNACES. 1914 Number.	1914 Capacity per heat or melt (tons).	1909 Number.	1909 Capacity per heat or melt (tons).
Total	864	44,616	706	30,574
Less than 50 tons	346	8,673	367	9,676
50 to 59 tons	189	9,673	137	6,926
60 to 69 tons	127	7,695	105	6,365
70 to 79 tons	92	6,750	51	3,790
80 to 99 tons	57	4,725	44	3,567
100 tons	38	3,800	....	....
Over 100 tons	[1] 15	[1] 3,300	2	250

[1] Comprises 8 of 250 tons; 5 of 200; 1 of 165; and 1 of 135.

Converters.—The statistics in regard to the number of establishments equipped with converters and their capacity are given, by states, in Table 65. The increase in capacity during the period 1909–1914 was at the rate of 8.4 per cent, as compared with an increase of 13.6 per cent for the period 1904–1909. This relatively small increase in Bessemer steel capacity is in contrast with the large increase in open-hearth steel capacity which increased over 50 per cent during the period 1909–1914, and over 80 per cent during the period 1904–1909. There has not been any increase in the size of the converters. The largest are of 20-ton capacity.

Table 65

STATE.	Census year.	Number of establishments.	CONVERTERS. Total. Number.	Total. Daily capacity (tons).	Bessemer. Number.	Bessemer. Daily capacity (tons).	Tropenas. Number.	Tropenas. Daily capacity (tons).	Other kinds. Number.	Other kinds. Daily capacity (tons).
United States	1914	55	115	53,106	[1] 64	52,480	30	354	21	272
	1909	54	112	49,005	69	48,377	24	348	19	280
	1904	44	92	43,123	61	42,675	13	95	18	353
Pennsylvania	1914	13	31	19,834	24	19,730	5	34	2	70
	1909	15	33	16,644	25	16,515	7	79	1	50
	1904	12	29	16,929	25	16,895	3	24	1	10
Ohio	1914	14	24	14,572	14	14,460	6	82	4	30
	1909	11	20	15,358	16	15,317	2	16	2	25
	1904	7	13	10,838	12	10,830	....	....	1	8
Illinois	1914	4	11	7,067	8	7,000	3	67	....	....
	1909	7	15	6,667	8	6,500	3	90	4	77
	1904	4	11	7,227	8	7,200	3	27	....	....
New York	1914	2	8	2,830	4	2,780	4	50	....	....
	1909	2	6	2,805	4	2,780	2	25	....	....
	1904	2	6	1,310	4	1,290	2	20	....	....
Alabama	1914	1	2	2,200	2	2,200	....	....	....	....
	1909	1	2	950	2	950	....	....	....	....
	1904	1	1	500	1	500	....	....	....	....
Maryland	1914	1	3	2,100	3	2,100	....	....	....	....
	1909	1	3	2,150	3	2,150	....	....	....	....
	1904	1	3	2,200	3	2,200	....	....	....	....
Colorado	1914	1	2	2,000	2	2,000	....	....	....	....
	1909	1	2	2,000	2	2,000	....	....	....	....
	1904	1	2	2,000	2	2,000	....	....	....	....
West Virginia	1914	2	4	1,490	4	1,490	....	....	....	....
	1909	2	4	1,385	4	1,385	....	....	....	....
	1904	2	4	1,260	4	1,260	....	....	....	....
Kentucky	1914	1	2	600	2	600	....	....	....	....
	1909	1	2	600	2	600	....	....	....	....
	1904	1	2	500	2	500	....	....	....	....
New Jersey	1914	2	3	132	1	120	2	12	....	....
	1909	3	6	205	3	180	....	....	3	25
	1904	3	6	45	....	....	....	....	6	45
Wisconsin	1914	5	8	111	....	....	6	76	2	35
	1909	2	5	110	....	....	5	110	....	....
	1904	2	3	38	....	....	....	....	3	38
All other states	1914	[2] 9	17	170	....	....	4	33	13	137
	1909	8	14	131	....	....	5	28	9	103
	1904	8	12	276	....	....	5	24	7	252

[1] Includes 12 Bessemer converters of 12,600 tons daily capacity, in Alabama, Maryland, and Pennsylvania, used wholly or in part for purifying metal for open-hearth furnaces.

[2] Comprises Delaware 3, Michigan 2, and 1 each in California, Connecticut, Massachusetts, and Oregon.

Crucible steel furnaces.—The statistics in regard to crucible furnace equipment are given in Table 66. It covers active establishments only and includes the equipment of establishments not classified as "steel works and rolling mills" but equipped for making crucible steel, 3 in number in 1914, with 6 furnaces and 76 pots of 18 tons daily capacity.

Table 66

STATE.	Census year.	CRUCIBLE STEEL FURNACES. Number of establishments.	Number of furnaces.	Number of pots.	Daily capacity, tons of steel, double turn.
United States	1914	62	241	3,916	886
	1909	67	278	4,074	886
	1904	44	160	2,723	717
	1899	37	159	2,528	575
Pennsylvania	1914	26	97	2,358	579
New York	1914	6	24	508	127
New Jersey	1914	6	19	316	87
Wisconsin	1914	7	37	218	24
Illinois	1914	2	8	96	21
Indiana	1914	2	5	56	12
Massachusetts	1914	4	10	82	10
Michigan	1914	3	17	68	8
Tennessee	1914	1	2	32	6
Delaware	1914	1	8	48	5
Minnesota	1914	1	6	36	4
Ohio	1914	2	7	60	2
Rhode Island	1914	1	1	8	1

Electric steel furnaces.—Table 67 gives the statistics for electric steel furnaces in 1914 and 1909. None were reported prior to the census of 1909.

Table 67

STATE.	Census year.	ELECTRIC STEEL FURNACES. Number of establishments and furnaces.	Daily capacity, tons of steel, double turn.	STATE.	Census year.	ELECTRIC STEEL FURNACES. Number of establishments and furnaces.	Daily capacity, tons of steel, double turn.
United States	1914	[1] 15	438	Massachusetts	1914	1	83
	1909	4	285	Michigan	1914	1	25
California	1914	1	3	New Jersey	1914	2	38
District of Columbia	1914	1	3	New York	1914	2	32
Illinois	1914	1	100	Ohio	1914	1	25
				Pennsylvania	1914	4	124
				Wisconsin	1914	1	5

[1] Includes 10 Herault furnaces, 422 tons; 3 Stassano, 9 tons; 1 Girod, 2 tons; and 1 Snyder, 5 tons.

At the census of 1909 there were four electric furnaces, all of the Herault type, located, two in Pennsylvania, and one each in Illinois and New York. The Herault furnaces range from 2 to 15 tons charge capacity; the Stassano furnaces, 1,000 and 2,000 pounds per charge, and the Girod and Snyder furnaces are rated at 2,000 pounds per charge.

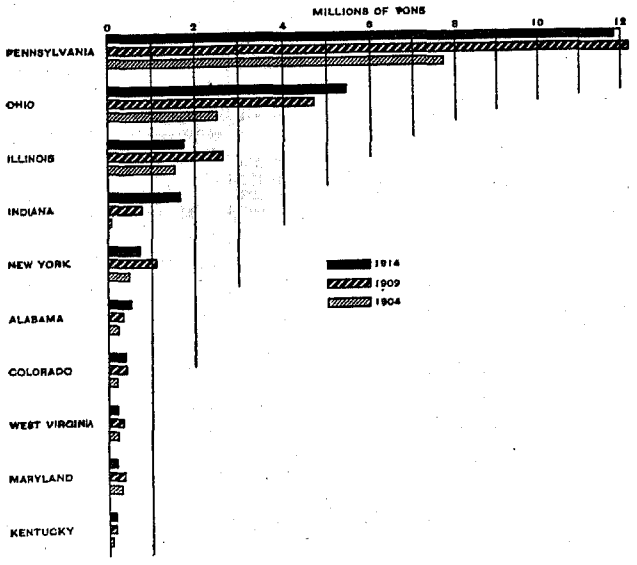
Other steel furnaces.—The only steel furnaces, other than the above, reported in 1914, were 7 McHaffie furnaces of 4 tons daily capacity.

Metal mixers.—Establishments operating blast furnaces and steel plants in conjunction use metal mixers or reservoirs which receive the molten blast-furnace metal and from which the molten metal is drawn for the converters and open-hearth furnaces. In 1914, 35 establishments reported 69 metal mixers, with an aggregate capacity of 20,885 tons; and in 1909 there were 30 establishments, with 59 mixers of 14,343 tons capacity. In 1909 the largest was of 500 tons capacity. In 1914 there were reported 3 mixers of 600 tons capacity each, and 2, in Maryland and Pennsylvania, of 1,000 tons capacity each.

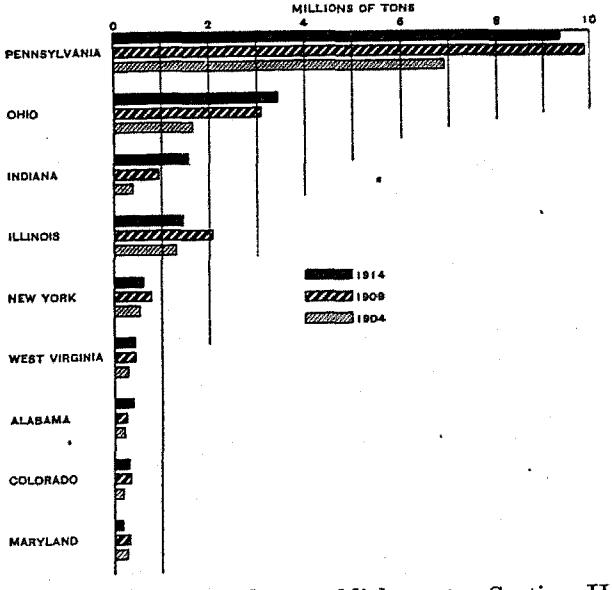
Production of steel and finished rolling-mill products and forgings, by states.—The diagrams following show the tonnage of steel produced and the tonnage of finished rolled products and forgings for 1914, 1909, and 1904, for the states having a product in excess of 150,000 tons in 1914. The steel production of all states not shown in the diagrams was 421,658 tons in 1914, and the tonnage of finished rolled products and forgings was 710,205 tons.

STEEL WORKS AND ROLLING MILLS: 1914, 1909, AND 1904.

STEEL PRODUCTION.



FINISHED ROLLED PRODUCTS AND FORGINGS.



Materials, products, and equipment in detail, by states.—Detail statistics of materials, products, and equipment are given, by states, in Table 68, for 1914, being presented in five sections. Section I relates to material; Section II gives the direct or primary products of the establishments; Section III gives the statistics of steel production; Section IV, the statistics of manufactures made in the mills producing from direct or primary products; and Section V the statistics relating to equipment.

STEEL WORKS AND ROLLING MILLS—DETAIL STATISTICS

[Tons of 2,240 pounds.]

	Table 68	United States.	California.	Delaware.	Illinois.	Indiana.
1	Number of establishments	427	7	5	25	19
	I. MATERIALS USED.					
2	Total cost	$590,825,692	$2,673,467	$932,104	$39,938,064	$37,056,547
	Iron and steel:					
	For furnaces and hot rolls—					
	Pig iron, including ferroalloys—					
3	Tons	17,429,657	(2)	6,172	1,637,922	1,091,632
4	Cost	$248,630,958	(2)	$145,573	$24,026,163	$14,428,504
	Pig iron—					
5	Tons	17,128,092	(2)	5,059	1,591,363	1,074,046
6	Produced by consumer	15,111,458			1,446,769	(2)
7	Purchased	2,016,634	(2)	5,059	144,594	(2)
8	Cost	$232,131,772	(2)	$100,402	$22,304,054	$13,691,646
	Ferroalloys—Spiegeleisen, ferromanganese, ferrosilicon, etc.—					
9	Tons	301,565	(2)	1,113	46,559	17,586
10	Produced by consumer	108,238			36,425	(2)
11	Purchased	193,327	(2)	1,113	10,134	(2)
12	Cost	$16,499,186	(2)	$45,171	$1,722,109	$736,858
	Scrap, including old rails not intended for rerolling—					
	From outside sources—					
13	Tons	5,070,880	77,863	4,402	290,888	516,078
14	Produced by consumer in other works	899,113			14,900	64,929
15	Purchased	4,171,767	77,863	4,402	275,988	451,149
16	Cost	$59,381,527	$780,193	$65,483	$2,986,465	$5,684,070
17	Made and consumed in same works, tons	5,585,307	8,226	583	352,873	454,910
	Ingots, blooms, billets, slabs, muck and scrap bar, rails for rerolling and sheet and tin-plate bars, not produced in works where consumed—					
18	Tons	6,458,399	(2)	(2)	294,080	454,631
19	Produced by consumer in other works	2,882,069			61,003	(2)
20	Purchased	3,576,330	(2)	(2)	233,087	(2)
21	Cost	$132,178,063	(2)	(2)	$5,577,931	$7,553,200
	Rolled forms for further manufacture—					
	Skelp—					
	From outside sources—					
22	Tons	192,557				
23	Produced by consumer in other works	47,998				
24	Purchased	144,559				
25	Cost	$5,496,850				
26	Made and consumed in same works, tons	1,183,756				
	Wire rods—					
	From outside sources—					
27	Tons	95,695	(2)			
28	Produced by consumer in other works	76,717				
29	Purchased	18,978	(2)			
30	Cost	$2,352,027	(2)			
31	Made and consumed in same works, tons	1,399,066			127,029	(2)
	Iron ore:					
32	Tons	999,472	540	(2)	72,803	138,200
33	Cost	$4,252,201	$4,151	(2)	$274,359	$512,638
	Domestic—					
34	Tons	969,617	540	(2)	72,790	138,200
35	Cost	$4,053,213	$4,151	(2)	$274,102	$512,638
	Foreign—					
36	Tons	29,855			(2)	
37	Cost	$198,988			(2)	
	Copper ingots, billets, blooms, bars, scrap, etc.:					
38	Tons	13,335	(2)		(2)	
39	Cost	$4,069,309	(2)		(2)	
40	Fuel and rent of power, cost	$55,447,804	$227,382	$112,421	$3,883,907	$4,239,649
41	All other materials, cost	$79,016,953	$1,006,510	$327,881	$2,158,109	$4,638,486
	II. PRODUCTS.					
42	Total value	$918,664,565	$4,213,736	$1,669,004	$64,995,121	$58,882,522
	Rolled, forged, and other classified steel and iron products:					
43	Tons	25,522,784	73,805	19,270	1,901,330	1,854,050
44	For sale	16,904,966	68,193	9,177	1,454,105	1,456,541
45	For consumption	8,617,818	5,612	10,093	447,225	397,509
46	Value	$800,278,038	$3,125,353	$1,388,697	$58,695,178	$54,024,126
	Finished rolled products and forgings—					
	Rails—					
47	Tons	[3] 1,842,041			(2)	(2)
48	Value	$54,009,918			(2)	(2)
	Open-hearth steel—					
49	Tons	[4] 1,522,684			(2)	(2)
50	Value	$45,336,381			(2)	(2)
	Bessemer steel—					
51	Tons	319,357			(2)	
52	Value	$8,673,537			(2)	
	Rerolled, or renewed rails—					
53	Tons	63,671				
54	Value	$1,438,237				
	Rail fastenings (splice bars, tie-plates, fishplates, etc.)—					
55	Tons	349,307	(2)		(2)	(2)
56	Value	$11,526,956	(2)		(2)	(2)
	Structural shapes—					
57	Tons	2,083,440	11,974		222,058	210,343
58	Heavy (3-inch and over, leg or web)	1,889,674	5,000		215,583	184,593
59	Light (less than 3-inch, leg or web)	193,766	6,974		6,475	25,750
60	Value	$57,475,366	$658,912		$6,009,613	$5,591,345
	Merchant bars (including bars or rods, not elsewhere specified)—					
61	Tons	2,474,737	13,985		235,853	441,629
62	For sale	2,301,395	13,985		213,969	434,331
63	For consumption	173,342			21,884	7,298
64	Value	$84,409,500	$731,443		$6,820,357	$12,492,482
	Bars for reenforced concrete—					
65	Tons	269,966	(2)		(2)	37,771
66	Value	$7,751,549	(2)		(2)	$1,093,663

[1] All other states embrace: Alabama, 6 establishments; Colorado, 1; Connecticut, 4; District of Columbia, 1; Georgia, 1; Maine, 1; Maryland, 3; Minnesota, 1; Oklahoma, 1; Oregon, 1; Rhode Island, 3; Tennessee, 1; Texas, 1; Virginia, 2; and Washington, 1.

OF MATERIALS, PRODUCTS, AND EQUIPMENT, BY STATES: 1914.

[Tons of 2,240 pounds.]

Kentucky	Massachusetts.	Michigan.	Missouri.	New Jersey.	New York.	Ohio.	Pennsylvania.	West Virginia.	Wisconsin.	All other states.[1]	
6	11	9	3	15	24	70	178	15	12	28	1
$7,154,938	$8,801,811	$870,941	$1,886,580	$5,185,468	$18,216,613	$139,676,491	$285,382,084	$14,658,368	$3,555,140	$24,837,076	2
123,761	25,102	3,826	(2)	61,141	522,783	4,388,023	8,400,181	207,971	8,214	918,770	3
$1,802,564	$490,298	$79,891	(2)	$1,213,714	$7,150,599	$62,109,373	$121,053,459	$3,081,419	$193,791	$12,284,533	4
(2)	24,136	3,606	(2)	56,965	502,847	4,341,857	8,262,049	206,436	7,307	897,070	5
	(2)				399,320	3,951,843	7,230,146	183,564		829,366	6
(2)	(2)	3,606	(2)	56,965	103,527	390,014	1,031,903	22,872	7,307	67,704	7
(2)	$433,796	$66,743	(2)	$991,513	$6,197,458	$59,180,555	$112,472,123	$2,981,108	$154,726	$11,326,616	8
(2)	966	220	(2)	4,176	19,936	46,166	138,132	1,535	907	21,700	9
						10,306	46,560			3,607	10
(2)	966	220	(2)	4,176	19,936	35,860	91,572	1,535	907	18,093	11
(2)	$56,502	$13,148	(2)	$222,201	$953,141	$2,928,818	$8,581,336	$100,311	$39,665	$957,917	12
(2)	66,381	4,116	(2)	73,058	194,541	855,163	2,595,148	18,022	13,329	283,723	13
	(2)			(2)		158,243	641,598	902		9,257	14
(2)	(2)	4,116	(2)	(2)	194,541	696,920	1,953,550	17,120	13,329	274,466	15
(2)	$772,005	$48,812	(2)	$957,760	$2,456,598	$9,452,349	$31,924,141	$185,252	$159,153	$3,199,285	16
22,298	15,274	526	11,395	40,353	176,832	1,076,839	3,009,366	22,929	2,379	390,524	17
59,619	54,492	14,023	(2)	25,338	92,296	1,902,828	2,841,514	444,390	119,472	127,622	18
	(2)	(2)	(2)		(2)	1,057,953	1,344,803	111,490	119,472	66,507	19
59,619	(2)	(2)	(2)	25,338	(2)	844,875	1,496,711	332,900		61,115	20
$1,390,625	$1,234,848	$407,249	(2)	$959,219	$1,763,386	$38,370,551	$60,435,107	$9,182,182	$2,392,216	$2,264,797	21
						26,936	164,771	850			22
						7,710	39,438	850			23
						19,226	125,333				24
						$888,978	$4,577,872	$30,000			25
					9,400	607,351	536,814	30,191			26
(2)				(2)		76,045	7,838			233	27
						70,823	5,894				28
						5,222	1,944			233	29
(2)				(2)		$1,843,093	$199,555			$6,757	30
(2)					(2)	210,867	776,634			146,323	31
	(2)										
(2)	472	(2)	(2)	5,553	36,067	147,464	580,818	1,267	(2)	11,598	32
(2)	$3,278	(2)	(2)	$34,153	$161,519	$455,440	$2,741,327	$8,872	(2)	$31,546	33
(2)	472	(2)	(2)	4,493	36,067	147,179	552,661	1,267	(2)	11,258	34
(2)	$3,278	(2)	(2)	$25,174	$161,519	$450,346	$2,558,080	$8,872	(2)	$30,135	35
				(2)		(2)	28,157			340	36
				(2)		(2)	$183,247			1,411	37
										98	38
	(2)				(2)	262	2,354			$54,506	39
	(2)				(2)	$77,972	$851,961				
$376,710	$716,561	$140,046	$230,532	$1,179,193	$2,496,187	$9,840,609	$27,295,414	$823,743	$319,085	$3,566,365	40
$2,886,631	$3,766,877	$194,845	$827,024	$814,515	$4,187,724	$16,638,126	$36,303,248	$1,346,900	$490,790	$3,429,287	41
$9,077,908	$11,376,008	$1,716,351	$3,362,955	$10,420,452	$32,077,757	$205,023,391	$448,106,324	$21,185,559	$6,008,549	$40,548,928	42
191,499	137,759	13,367	49,739	141,914	703,710	6,303,890	12,288,141	566,252	125,777	1,152,281	43
148,055	48,840	12,058	37,727	109,292	619,416	3,043,348	8,739,566	143,225	125,777	889,646	44
43,444	88,919	1,309	12,012	32,622	84,294	3,260,542	3,548,575	423,027		262,635	45
$5,872,751	$4,577,987	$1,049,214	$2,592,135	$9,883,328	$26,465,401	$174,638,132	$397,618,602	$19,610,516	$5,282,265	$35,454,353	46
					(2)	(2)	566,125		(2)	608,911	47
					(2)	(2)	$16,197,964		(2)	$17,946,252	48
					(2)	(2)	424,927		(2)	540,599	49
					(2)	(2)	$12,512,147		(2)	$16,033,516	50
					(2)	(2)	141,198		(2)	68,312	51
					(2)	(2)	$3,685,817		(2)	$1,912,736	52
						10,364	26,444	16,536		10,327	53
						$209,435	$579,843	$413,401		$235,558	54
					(2)	24,365	108,235		2,848	9,625	55
					(2)	$728,466	$3,872,023		$85,440	$348,769	56
					(2)	47,350	1,499,077		(2)	(2)	57
					(2)	6,288	1,391,577		(2)	(2)	58
					(2)	41,062	107,500		(2)	(2)	59
					(2)	$1,442,068	$41,178,413		(2)	(2)	60
				.27,202	87,105	299,957	1,187,216		(2)	91,387	61
(2)	(2)	(2)	(2)	24,423	87,105	284,695	1,064,180		(2)	91,304	62
(2)	(2)	(2)	(2)	2,779		15,262	123,036			83	63
	(2)	(2)					$41,520,566		(2)	$3,045,864	64
(2)			(2)	$1,781,928	$3,854,026	$10,784,382					
						77,309	55,693		(2)	15,772	65
			(2)	(2)	(2)	$2,233,658	$1,525,540		(2)	$508,495	66
			(2)								

[1] Includes 178 tons of electric-steel rails.

[2] Included in total, but amount not shown in order to avoid disclosing individual operations.

[3] Includes 27,286 tons of alloy steel rails.

STEEL WORKS AND ROLLING MILLS—DETAIL STATISTICS OF

Table 68—Continued.

		United States.	California.	Delaware.	Illinois.	Indiana.
	II. PRODUCTS—continued.					
	Rolled, forged, and other classified steel and iron products—Continued.					
	Finished rolled products and forgings—Continued.					
	Spike and chain rods, bolt and nut rods, horseshoe bars, strips, etc—					
1	Tons	535,875	(1)		(1)	(1)
2	For sale	45,916	(1)			(1)
3	For consumption	489,959	(1)		(1)	(1)
4	Value	$18,319,865	(1)		(1)	(1)
	Wire rods—					
5	Tons	2,377,691			372,161	(1)
6	For sale	535,093			177,558	(1)
7	For consumption	1,842,593			194,603	(1)
8	Value	$61,578,145			$9,383,885	(1)
	Plates and sheets (not elsewhere specified)—					
9	Tons	3,699,249		(1)	(1)	358,653
	Steel—					
10	Plates	2,163,956			(1)	221,186
11	Sheets	1,344,583		(1)	(1)	137,467
12	Iron plates and sheets	190,710				
13	Plates (No. 12 and thicker)	2,183,775			(1)	240,936
14	For sale	2,064,455			(1)	189,016
15	For consumption	119,320				51,920
16	Sheets (No. 13 and thinner)	1,515,474		(1)	(1)	117,717
17	For sale	842,817			(1)	51,051
18	For consumption	672,657		(1)	(1)	66,666
19	Value	$129,785,963		(1)	(1)	$11,912,768
20	Steel	$121,795,414		(1)	(1)	$11,912,768
21	Iron	$7,990,549				
	Black plates (or sheets) for tinning—					
22	Tons	1,011,938			(1)	(1)
23	Value	$43,147,041			(1)	(1)
	Skelp, flue, and pipe—					
24	Tons	1,960,844				
25	For sale	506,380				
26	For consumption	1,454,464				
27	Value	$52,443,303				
	Hoops, bands, and cotton ties—					
28	Tons	603,940			(1)	(1)
29	Value	$19,945,078			(1)	(1)
30	Nail and tack plate—					
	Tons	50,302				
31	For sale	19,751				
32	For consumption	30,551				
33	Value	$2,008,308				
	Axles, rolled or forged—					
34	Tons	89,436				(1)
35	Value	$3,407,271				(1)
	Armor plates, gun forgings, and ordnance—					
36	Tons	38,669				
37	Value	$19,947,893				
	All other rolled steel or iron—					
38	Tons	619,674			54,051	
39	Value	$37,125,670			$2,310,038	
	All forged, or other iron and steel products, not including remanufactures of rolling-mill products—					
40	Tons	411,402	(1)		(1)	(1)
41	Value	$19,165,900	(1)		(1)	(1)
	Partly finished rolled products—					
	Blooms, billets, and slabs, steel—					
42	Tons	3,991,873	(1)		221,625	(1)
43	Value	$80,638,672	(1)		$4,423,696	(1)
44	Made and consumed in same works, tons	13,102,896	19,086		897,994	899,407
	Rolled blooms, and billets for forging purposes—					
45	Tons	65,939			(1)	(1)
46	Value	$1,695,637			(1)	(1)
47	Made and consumed in same works, tons	68,856				31,064
48	Hammered charcoal, blooms, billets, and slabs, made and consumed in same works, tons.	35,794				
	Sheet and tin-plate bars—					
49	Tons	2,241,735			(1)	(1)
50	Value	$45,372,785			(1)	(1)
51	Made and consumed in same works, tons	723,350			87,083	10,369
	Muck and scrap bar—					
52	Tons	108,483	(1)			(1)
53	Value	$2,967,815	(1)			(1)
54	Made and consumed in same works, tons	958,640	27,554		79,929	164,299
	Unrolled steel—					
	Ingots—					
55	Tons	63,371	(1)		(1)	(1)
56	Value	$1,383,468	(1)		(1)	(1)
	Direct steel castings—					
57	Tons	569,201	(1)	(1)	103,523	27,163
58	Value	$44,733,698	(1)	(1)	$9,187,098	$1,999,304
	Scrap steel or iron—					
59	Tons	1,446,164		(1)	101,382	71,883
60	For sale	983,216		(1)	38,937	71,502
61	For transfer to other works	462,948			62,445	381
62	Value	$16,334,843		(1)	$1,235,175	$807,340
63	Made and consumed in same works, tons	5,595,122	8,226	3,271	353,434	454,910
64	All other steel or iron products, not rolled, including value added to iron and steel rolling-mill products by further manufacture, value.	$85,238,964	$771,276	$223,954	$3,621,971	$3,721,880
65	All products other than steel or iron, value	$15,103,136	$285,956	$13,868	$1,302,283	$312,219
66	Custom work and repairing, value	$1,709,584	$31,151	$4,961	$140,514	$16,957
	III. STEEL PRODUCTIONS (TONS).					
67	Total	23,333,474	(1)	(1)	1,767,858	1,662,839
68	Ingots	22,814,273	(1)		1,664,335	(1)
69	Direct steel castings	569,201	(1)	(1)	103,523	(1)
	Classified according to process:					
70	Open-hearth	17,063,285	(1)	(1)	888,441	(1)
71	Basic	16,233,099	(1)		876,908	(1)
72	Acid	830,186		(1)	11,533	(1)

[1] Included in total, but amount not shown in order to avoid disclosing individual operations.

MATERIALS, PRODUCTS, AND EQUIPMENT, BY STATES: 1914—Continued.

Kentucky.	Massachusetts.	Michigan.	Missouri.	New Jersey.	New York.	Ohio.	Pennsylvania.	West Virginia.	Wisconsin.	All other states.	
	(1)		(1)	(1)	55,967	64,838	228,201		(1)	47,585	1
					23,617		3,439		(1)	2,925	2
	(1)		(1)	(1)	32,350	64,838	224,762			44,660	3
	(1)		(1)	(1)	$1,924,100	$2,218,108	$7,825,372		(1)	$1,655,148	4
(1)	(1)			(1)	(1)	455,925	1,104,133			161,175	5
(1)	(1)			(1)	(1)	68,792	232,141			8,615	6
	(1)			(1)	(1)	387,133	871,992			152,560	7
(1)	(1)			(1)	(1)	$11,690,793	$27,959,516			$4,382,521	8
(1)			(1)		60,007	988,997	1,900,427	100,277		(1)	9
					27,616	277,999	1,459,847	8,183		(1)	10
(1)			(1)		32,391	564,678	434,161	92,094			11
(1)						146,320	6,419				12
					27,616	283,884	1,452,489	8,183		(1)	13
					27,616	272,476	1,400,526	5,696		(1)	14
(1)						11,408	51,963	2,487			15
(1)			(1)		32,391	705,113	447,938	92,094			16
(1)					22,599	340,256	307,374	75,189			17
(1)			(1)		9,792	364,857	140,564	16,905			18
(1)			(1)		$2,659,499	$38,892,399	$61,657,951	$4,305,709		(1)	19
(1)			(1)		$2,659,499	$32,877,772	$61,316,628	$4,305,709		(1)	20
(1)						$6,014,627	$341,323				21
						176,835	564,539	200,825		(1)	22
						$7,424,689	$23,744,024	$8,803,540		(1)	23
					(1)	955,597	860,969	114,020	(1)	(1)	24
						208,725	272,956	3,841	(1)	(1)	25
					(1)	746,872	588,013	110,179			26
					(1)	$24,478,568	$24,001,966	$3,013,905	(1)	(1)	27
	(1)					(1)	373,658			(1)	28
	(1)					(1)	$12,934,152			(1)	29
(1)	(1)					(1)	31,318	(1)			30
	(1)						11,675	(1)			31
(1)	(1)					(1)	19,643	(1)			32
(1)	(1)					(1)	$1,299,420	(1)			33
					(1)	(1)	61,920				34
					(1)	(1)	$2,515,703				35
				(1)			36,671			(1)	36
				(1)			$19,090,468			(1)	37
	(1)		(1)	51,851	12,246	41,181	443,694			12,608	38
	(1)		(1)	$3,805,889	$1,503,391	$3,946,741	$24,380,743			$939,685	39
	(1)			5,104	8,589	16,312	326,268	(1)		14,002	40
	(1)			$895,220	$605,452	$462,015	$15,329,125	(1)		$788,469	41
(1)	(1)			(1)	(1)	1,701,620	1,604,583	(1)		106,778	42
(1)	(1)			(1)	(1)	$33,030,372	$33,510,622	(1)		$117,184	43
52,606	68,781			28,410	431,835	2,917,559	6,998,477	34,564		754,177	44
				(1)	(1)	(1)	30,528			10,743	45
				(1)	(1)	(1)	$794,183			$303,460	46
				1,755	421	938	33,438			1,240	47
						7,546	28,248				48
					(1)	1,033,972	928,249				49
(1)					(1)	$20,877,350	$18,811,666				50
						257,945	363,686			4,267	51
					(1)		97,742	(1)			52
					(1)		$2,678,512	(1)			53
5,399	9,500		4,396	32,913	61,405	140,932	378,893			53,420	54
	(1)			(1)		(1)	37,053	(1)		(1)	55
	(1)			(1)		(1)	$882,882	(1)		(1)	56
	5,599	6,245	(1)	8,068	33,619	103,335	215,398	(1)	18,604	5,650	57
	$562,154	$767,954	(1)	$1,496,797	$2,816,526	$7,078,409	$15,327,948	(1)	$1,850,706	$508,593	58
12,730	(1)	2,395		2,913	15,572	373,939	767,422	66,464	(1)	19,408	59
12,730	(1)	1,998		2,913	15,572	247,491	516,628	62,415	(1)	7,742	60
		397				126,448	250,794	4,049	(1)	11,666	61
$161,284	(1)	$21,270		$38,053	$154,580	$3,746,464	$9,103,791	$745,847	(1)	$150,760	62
22,298	13,905	526	10,895	38,883	177,285	1,076,839	3,013,537	22,929	2,379	395,805	63
$1,183,913	$6,745,236	$537,216	$770,820	$395,336	$4,980,097	$25,302,153	$36,376,107	$738,141	$543,307	$4,309,539	64
$1,859,960	$49,176			$22,132	$413,051	$1,263,437	$4,261,671	$73,070	$46,994	$317,337	65
	$2,837	$108,651		$81,603	$64,628	$73,205	$746,153	$17,985	$4,000	$416,939	66
(1)	85,745	6,245	(1)	139,594	745,441	5,449,981	11,837,503	(1)	18,604	1,230,109	67
(1)	(1)			131,526	711,822	5,346,646	11,622,105	(1)		1,224,459	68
	(1)	6,245	(1)	8,068	33,619	103,335	215,398	(1)	18,604	5,650	69
(1)	(1)	(1)	(1)	127,285	603,642	2,589,535	9,741,125	(1)	(1)	1,143,802	70
(1)	(1)	(1)	(1)	78,576	591,753	2,554,956	9,129,227	(1)		1,143,802	71
(1)	(1)			48,709	11,889	34,579	611,898	(1)	(1)		72

Table 68—Continued.

		United States.	California.	Delaware.	Illinois.	Indiana.
	STEEL PRODUCTIONS (TONS)—continued.					
	Classified according to process—Continued.					
1	Bessemer (including all converters)	6,218,805	.....	(1)	867,804	.....
2	Crucible	79,791	.....	.....	2,439	(1)
3	Electric, or electrically refined, and miscellaneous	21,593	(1)	.....	9,174	.....
4	*Duplex steel*—basic open-hearth, made from metal partly purified in Bessemer converters (included above).	401,621	.....	.....	(1)	.....
	Alloy steel (included above):					
	Classified according to process—					
5	Open-hearth	264,100	.....	.....	(1)	(1)
6	Basic	230,408	.....	.....	(1)	(1)
7	Acid	33,692	.....	(1)	(1)	.....
8	Bessemer	9,146	.....	.....	(1)	.....
9	Crucible, electric, and miscellaneous	32,710	.....	.....	(1)	.....
	Classified according to form—					
10	Ingots	294,128	.....	.....	(1)	(1)
11	Castings	11,828	.....	(1)	(1)	.....
12	Alloy steel rails (included under rails, Group II)	27,286	.....	.....	(1)	(1)
	IV. MANUFACTURES FROM IRON AND STEEL ROLLING-MILL PRODUCTS.					
	(Made in mill producing, value previously included under various items of Group II.)					
13	Wire departments of rolling mills, products, total value	$74,972,923	.....	.....	$7,733,106	$3,038,924
	Pipes and tubes, not including cast pipe:					
	Wrought welded—					
14	Tons	1,130,652	.....	.....	.....	.....
15	Value	$55,461,650	.....	.....	.....	.....
	Seamless, hot finished, or cold drawn—					
16	Tons	64,765	.....	.....	.....	.....
17	Value	$5,821,467	.....	.....	.....	.....
	All other, clinched, riveted, etc.—					
18	Tons	17,345	.....	.....	.....	.....
19	Value	$834,209	.....	.....	.....	.....
	Bolts, nuts, rivets, washers, etc.:					
20	Kegs (200 pounds)	2,091,533	49,443	.....	(1)	(1)
21	Value	$9,682,385	$316,003	.....	(1)	(1)
	Nails and spikes (not including wire nails or wire tacks):					
	Railroad spikes—	1,366,177				
22	Kegs (200 pounds)	$4,201,388	(1)	.....	(1)	.....
23	Value		(1)	.....	(1)	.....
	Other forged—					
24	Kegs (100 pounds)	45,936	.....	.....	(1)	.....
25	Value	$92,783	.....	.....	(1)	.....
	Cut—					
26	Kegs (100 pounds)	740,436	.....	.....	.....	(1)
27	Value	$1,469,780	.....	.....	.....	(1)
	All other (including tacks)—					
28	Kegs (100 pounds)	29,916	.....	.....	.....	.....
29	Value	$62,161	.....	.....	.....	.....
	Horse and mule shoes:					
30	Kegs (200 pounds)	1,015,230	.....	.....	(1)	.....
31	Value	$7,122,462	.....	.....	(1)	.....
	Springs, not including wire springs:					
32	Tons	11,889	.....	.....	5,600	.....
33	Value	$872,863	.....	.....	$425,460	.....
	Galvanized plates or sheets:					
34	Tons	971,189	.....	(1)	(1)	(1)
35	Value	$42,862,394	.....	(1)	(1)	(1)
	Cast-iron pipe and fittings, car and locomotive wheels, gray iron, malleable iron, and semisteel castings, and all castings other than steel:					
36	Tons	116,536	(1)	.....	.....	(1)
37	Value	$5,314,946	(1)	.....	.....	(1)
	Stamped ware:					
38	Tons	36,844	.....	.....	.....	(1)
39	Value	$3,205,627	.....	.....	.....	(1)
40	Steelcars, machinery, switches, frogs, crossings, and shovels, spades, scoops, etc., value	$7,867,562	(1)	.....	.....	(1)
	V. STEEL-MAKING EQUIPMENT.					
	Steel plants:					
	Steel furnaces and converters—					
41	Number	1,222	8	18	78	67
42	Daily capacity, tons of steel, double turn	147,771	315	150	13,748	8,582
	Open-hearth furnaces—					
43	Number	851	6	2	58	62
44	Daily capacity	93,365	300	83	6,560	8,570
	Basic—					
45	Number	705	6	.....	56	54
46	Daily capacity	85,446	300	.....	6,345	8,200
	Acid—					
47	Number	146	.....	2	2	8
48	Daily capacity	7,919	.....	83	215	370
	Converters—					
49	Number	114	1	8	11	.....
50	Daily capacity	53,096	12	62	7,067	.....
	Used for partly purifying metal for open-hearth furnaces—					
51	Number	12	.....	.....	3	.....
52	Daily capacity	12,600	.....	.....	3,300	.....
	Crucible steel furnaces—					
53	Number	235	.....	8	8	5
54	Number of pots that can be used at a heat	3,840	.....	48	96	56
55	Daily capacity	868	.....	5	21	12
	Electric-steel furnaces—					
56	Number	15	1	.....	1	.....
57	Daily capacity	438	3	.....	100	.....
	Other steel furnaces—					
58	Number	7	.....	.....	.....	.....
59	Daily capacity	4	.....	.....	.....	.....
	Metal mixers—					
60	Number	69	.....	.....	9	5
61	Capacity	20,885	.....	.....	2,300	1,500

[1] Included in total, but amount not shown in order to avoid disclosing individual operations.

MATERIALS, PRODUCTS, AND EQUIPMENT, BY STATES: 1914—Continued.

Kentucky.	Massachusetts.	Michigan.	Missouri.	New Jersey.	New York.	Ohio.	Pennsylvania.	West Virginia.	Wisconsin.	All other states.	
(1)	(1)	(1)		7,414	119,998	2,860,129	2,038,775	(1)	4,302	85,956	1
	(1)	(1)		3,873	17,114	12	52,939		1,378	351	2
		(1)		1,022	4,687	305	4,664		(1)		3
							(1)			74,937	4
				(1)	(1)	33,082	210,827			105	5
				(1)	(1)	(1)	158,541			105	6
				(1)	(1)	(1)	52,286				7
				(1)	(1)	(1)	(1)		150	(1)	8
				(1)	9,729		15,599		(1)		9
				(1)	10,851	(1)	224,562			105	10
				(1)	(1)	(1)	4,339		290	(1)	11
					(1)	(1)	(1)				12
$452,289	$7,233,128				$2,773,690	$13,485,285	$33,630,971			$6,625,530	13
					(1)	523,926	571,456	(1)			14
					(1)	$24,361,108	$29,441,259	(1)			15
		(1)					(1)				16
		(1)					(1)				17
						(1)	(1)				18
						(1)	(1)				19
			(1)	(1)	(1)	(1)	1,441,344			29,926	20
			(1)	(1)	(1)	(1)	$6,633,771			$164,141	21
			(1)	(1)	(1)	(1)	593,684			166,657	22
			(1)	(1)	(1)	(1)	$1,816,722			$519,968	23
	(1)						27,516				24
	(1)						$50,940				25
(1)	(1)						410,351	(1)			26
(1)	(1)						$747,147	(1)			27
			(1)					(1)			28
			(1)					(1)			29
				(1)	(1)	(1)	323,393			136,944	30
				(1)	(1)	(1)	$2,293,041			$939,610	31
	1,939	1,727					2,367			256	32
	$142,308	$126,761					$161,134			$17,200	33
(1)			(1)		(1)	585,907	141,952	(1)			34
(1)			(1)		(1)	$21,364,731	$7,847,495	(1)			35
	(1)	(1)			19,451	26,990	18,397	(1)		30,790	36
	(1)	(1)			$1,288,080	$1,166,516	$891,925	(1)		$1,176,694	37
						34,258		(1)		(1)	38
						$2,764,442		(1)		(1)	39
		(1)			(1)	(1)	$6,689,529		(1)		40
8	22	23	8	38	67	143	628	8	51	65	41
1,225	670	131	306	997	6,701	27,661	71,416	1,775	650	13,444	42
6	10	1	8	18	33	111	480	4	5	47	43
625	570	40	306	752	3,712	13,062	50,885	285	510	7,105	44
5	5	1	8	9	25	103	383	3		47	45
500	297	40	306	491	3,392	12,536	45,689	245		7,105	46
1	5			9	8	8	97	1	5		47
125	273			261	320	526	5,196	40	510		48
2	1	4		3	8	24	30	4	8	10	49
600	7	58		132	2,830	14,572	19,824	1,490	111	6,331	50
							4			5	51
							5,000			4,300	52
	10	17		15	24	7	97		37	7	53
	82	68		302	508	60	2,358		218	44	54
	10	8		75	127	2	579		24	5	55
	1	1		2	2	1	4		1	1	56
	83	25		38	32	25	124		5	3	57
							7				58
							4				59
					3	15	30	1		6	60
					1,150	4,300	9,085	250		2,300	61

DETAIL STATE TABLES.

Table 69 shows, for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products, as reported for the industry. Table 70 presents, for 1914, by states, the more detailed statistics of the industry.

TABLE 69.—STEEL WORKS AND ROLLING MILLS—COMPARATIVE SUMMARY, BY STATES, FOR 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	427	248,716	2,706,553	$188,142	$590,826	$918,665
	1909	446	240,076	2,100,978	163,201	657,501	985,723
	1904	415	207,562	1,649,299	122,492	441,204	673,965
California	1914	7	1,244	6,833	1,059	2,673	4,214
	1909	5	1,038	3,945	829	2,348	3,520
	1904	4	773	2,618	492	779	1,489
Delaware	1914	5	818	3,545	454	932	1,669
	1909	5	710	4,912	416	1,059	1,715
	1904	5	1,055	10,310	412	940	1,597
Illinois	1914	25	15,408	178,709	12,968	39,938	64,995
	1909	24	17,584	152,470	12,962	56,244	86,608
	1904	23	16,448	111,308	10,071	38,650	60,022
Indiana	1914	19	11,106	88,724	9,620	37,057	58,883
	1909	17	12,255	111,806	8,390	26,099	38,652
	1904	21	7,215	48,504	4,072	10,906	16,920
Kentucky	1914	6	1,987	34,405	1,279	7,155	9,078
	1909	7	2,372	29,640	1,273	5,561	7,779
	1904	8	2,149	26,965	1,272	4,217	6,168
Massachusetts	1914	11	2,889	28,507	1,903	8,802	11,376
	1909	9	3,115	24,500	1,977	10,032	13,568
	1904	5	4,544	28,210	2,593	6,902	11,948
Michigan	1914	9	718	4,688	498	871	1,716
	1909	8	1,183	4,290	661	1,598	2,670
	1904	5	1,018	4,630	527	1,800	2,712
Missouri	1914	3	1,237	7,062	$954	$1,887	$3,363
	1909	4	2,227	6,255	1,320	2,859	5,013
	1904	4	1,349	4,692	928	1,588	2,999
New Jersey	1914	15	4,639	36,971	2,969	5,185	10,420
	1909	16	4,671	29,699	2,823	6,635	12,014
	1904	16	8,334	31,626	4,088	12,390	20,066
New York	1914	24	10,788	149,462	7,664	18,217	32,078
	1909	25	10,091	136,456	6,323	25,889	39,532
	1904	20	7,526	69,430	4,393	13,260	21,227
Ohio	1914	70	46,397	642,958	38,004	139,676	205,023
	1909	75	38,586	515,813	28,614	139,243	197,780
	1904	57	27,756	304,162	18,658	78,210	111,997
Pennsylvania	1914	178	131,955	1,270,642	96,926	285,382	448,106
	1909	189	126,911	896,440	85,113	329,013	500,344
	1904	186	110,904	820,823	65,306	237,875	363,774
West Virginia	1914	15	5,348	63,002	4,826	14,658	21,186
	1909	16	5,060	46,508	3,887	15,896	22,435
	1904	12	4,409	34,250	2,813	8,742	13,455
Wisconsin	1914	12	2,029	15,215	1,293	3,555	6,009
	1909	14	2,124	10,064	1,409	7,906	10,733
	1904	10	1,915	11,126	1,125	4,501	7,379
All other states	1914	28	12,153	175,830	7,725	24,838	40,549
	1909	32	12,149	128,180	7,204	27,119	43,360
	1904	39	12,167	140,645	5,742	20,444	32,212

TABLE 70.—STEEL WORKS AND ROLLING MILLS—DETAIL STATEMENT, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.	EXPENSES.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of— Maximum month.	Number, 15th day of— Minimum month.		Male.	Female	Male.	Female		Officials.	Clerks, etc.
United States	427	274,162	52	4,475	18,466	2,453	248,716	Mh 271,531	No 210,279	248,945	247,275	944	690	36	$1,258,370,594	$13,769,813	$23,746,114
California	7	1,362	.....	24	84	10	1,244	Ja 1,339	My 1,136	1,347	1,346	1	.....	.....	4,459,888	68,791	93,232
Delaware	5	900	.....	25	44	13	818	Mh 858	De 774	820	819	.....	1	.....	2,386,104	93,695	55,896
Illinois	25	17,416	.....	463	1,374	171	15,408	Mh 17,644	De 11,159	13,707	13,692	12	3	.....	75,266,666	1,376,675	1,785,135
Indiana	19	12,152	.....	166	777	103	11,106	Au 12,629	No 8,049	12,358	12,356	1	1	.....	83,884,909	545,483	1,095,453
Kentucky	6	2,083	.....	29	59	8	1,987	Ap 2,209	Ja 1,490	2,055	2,055	.....	.....	.....	4,971,254	80,509	75,351
Massachusetts	11	3,314	1	111	259	54	2,889	Mh 3,185	No 2,368	2,879	2,879	.....	.....	.....	13,450,020	222,334	332,154
Michigan	9	811	.....	32	50	11	718	Ap 875	Au 620	634	626	7	1	.....	2,482,433	79,916	79,439
Missouri	3	1,332	.....	14	68	13	1,237	Au 1,527	De 820	1,200	1,199	.....	1	.....	5,280,881	88,102	70,726
New Jersey	15	5,170	.....	77	393	61	4,639	Mh 4,913	De 4,416	4,795	4,784	9	2	.....	35,061,996	286,539	401,275
New York	24	11,791	6	190	692	115	10,788	Ap 12,008	Au 9,701	10,388	10,294	91	3	.....	77,383,481	709,477	931,355
Ohio	70	51,219	3	859	3,455	505	46,397	Mh 51,727	No 36,645	48,785	48,463	321	1	.....	232,224,732	2,368,915	4,641,282
Pennsylvania	178	144,954	36	2,101	9,640	1,222	131,955	Mh 142,387	No 114,695	129,021	127,914	420	651	36	601,245,338	6,515,506	12,211,843
West Virginia	15	5,741	.....	77	290	26	5,348	Ap 6,860	No 3,657	6,156	6,146	10	.....	.....	21,974,931	315,026	342,681
Wisconsin	12	2,256	.....	63	147	17	2,029	My 2,226	No 1,815	2,035	2,031	.....	4	.....	6,171,815	210,522	186,762
All other states[1]	28	13,661	6	244	1,134	124	12,153	.....	.....	12,765	12,671	72	22	.....	92,126,146	808,323	1,463,550

[1] All other states embrace: Alabama, 6 establishments; Colorado, 1; Connecticut, 4; District of Columbia, 1; Georgia, 1; Maine, 1; Maryland, 3; Minnesota, 1; Oklahoma, 1; Oregon, 1; Rhode Island, 3 Tennessee, 1; Texas, 1; Virginia, 2; Washington, 1.

TABLE 70.—STEEL WORKS AND ROLLING MILLS—DETAIL STATEMENT, BY STATES: 1914—Continued.

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					
	Salaries and wages—Continued.		Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage earners.	For contract work.	Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.[1]	Internal-combustion engines.[2]	Water wheels and motors.[1]	Electric (rented).	
United States	$188,142,398	$251,082	$612,844	$5,450,743	$535,377,888	$55,447,804	$918,664,565	$327,838,873	2,706,553	2,435,319	76,709	12,321	182,204	1,025,511
California	1,059,300	.....	3,970	24,826	2,446,085	227,382	4,213,736	1,540,269	6,833	3,133	200	.....	3,500	.....
Delaware	453,737	411	780	3,573	819,683	112,421	1,669,004	736,900	3,515	3,520	25	.....	.....	2,576
Illinois	12,968,451	5,702	4,880	272,682	36,054,157	3,883,907	64,995,121	25,057,057	178,709	147,196	24,085	.....	7,428	90,170
Indiana	9,620,200	15,856	.....	349,094	32,816,898	4,239,649	58,882,522	21,825,975	88,724	63,117	.....	.....	25,607	129,894
Kentucky	1,279,215	32,164	26,500	32,714	6,778,228	376,710	9,077,908	1,922,970	34,405	34,325	75	.....	5	1,538
Massachusetts	1,902,912	22	1,780	99,998	8,085,250	716,561	11,376,008	2,574,197	28,507	23,550	833	843	3,281	3,482
Michigan	497,999	.....	427	16,379	730,895	140,046	1,716,351	845,410	4,688	2,900	.....	.....	1,788	390
Missouri	954,402	8,235	.....	20,075	1,656,048	230,532	3,362,955	1,476,375	7,062	5,080	.....	.....	1,982	3,200
New Jersey	2,969,173	.....	3,034	87,658	4,006,275	1,179,193	10,420,452	5,234,984	36,971	34,755	31	530	1,655	11,674
New York	7,664,005	1,808	10,405	288,348	15,720,426	2,496,187	32,077,757	13,861,144	149,462	99,258	6,945	1,050	42,209	5,012
Ohio	38,004,187	22,222	64,548	1,405,181	129,835,882	9,840,609	205,023,391	65,346,900	642,958	601,164	14,296	1	27,497	186,057
Pennsylvania	96,926,375	148,031	463,593	2,205,514	258,086,670	27,295,414	448,106,324	162,724,240	1,270,642	1,194,594	28,418	213	47,417	529,869
West Virginia	4,825,980	.....	.....	75,741	13,834,625	823,743	21,185,559	6,527,191	63,002	61,690	585	.....	727	9,846
Wisconsin	1,293,116	10,150	7,780	81,153	3,236,055	319,085	6,008,549	2,453,409	15,215	12,675	720	.....	1,820	7,606
All other states	7,723,346	6,481	25,147	487,807	21,270,711	3,566,365	40,548,928	15,711,852	175,830	148,362	496	2,684	17,288	44,197

[1] Owned power only.
[2] Includes rented power, other than electric.

PART V.—THE WIRE INDUSTRY.

GENERAL STATISTICS.

Description of the industry.—The statistics here presented are for establishments engaged in wire drawing from rods of steel, iron, copper, brass, or other metal or alloy. The establishments may be grouped under three heads—(1) wire-drawing mills, not connected with rod-rolling mills; (2) wire-drawing departments of iron and steel rolling mills; and (3) wire-drawing departments of brass and copper rolling mills and establishments in other lines of manufacture which incidentally draw wire, principally for their own consumption. The first class constitutes the wire industry as a census industry classification, although the value of the products of these establishments constitutes barely half of the drawn-wire products of the country. The statistics for the establishments of the second and third classes are included in the classified industries "steel works and rolling mills," "brass, bronze, and copper products," and "electrical machinery, apparatus, and supplies," according to the character of the chief product.

Statistics pertaining to capital, labor, and other general items can only be given for the classified wire industry, but detail statistics for materials, products, and wireworking equipment are given for all establishments. No attempt was made to segregate the statistics of capital, persons engaged in the industry, and expenses of operation for the wire-drawing departments of rolling mills.

Establishments which manufacture wire goods from purchased wire and do not draw, are not included. In expressing quantities the ton of 2,000 pounds is used.

Prior to 1909 detailed reports regarding materials and products were not obtained from establishments of class 1, or from copper or brass rolling mills with wire departments, but only from the wire departments of the iron and steel rolling mills.

Summary for the wire industry as a whole.—Table 71 is a comparative summary of the value of the wire products of the several classes of establishments for 1914 and 1909. The total number of establishments drawing wire was 99 in 1914 and 93 in 1909. The total value embraces all products of the independent wire mills, including by-products.

Table 71 THE WIRE INDUSTRY.

	Number of establishments.		Value of products.		Per cent of increase,[1] 1909–1914.
	1914	1909	1914	1909	
Total	99	93	$172,600,546	$180,083,522	−4.2
Wire and manufactures of wire	.....	.....	166,999,888	173,349,614	−3.7
(1) Wire mills	54	56	78,150,487	79,249,869	−1.4
(2) Wire departments of iron and steel rolling mills	24	23	73,062,790	77,470,814	−5.7
(3) Brass and copper rolling mills and other concerns	21	14	15,786,611	16,628,931	−5.1
All other products	.....	.....	5,600,658	6,733,908	−16.8

[1] A minus sign (−) denotes decrease.

Of the total value of wire and manufactures of wire—$166,999,888 in 1914 and $173,349,614 in 1909—the independent wire mills produced 46.8 per cent in 1914, the iron and steel rolling mills, 43.7 per cent, and the wire-drawing departments of brass, copper, and other establishments, 9.5 per cent; and in 1909 the corresponding proportions were 45.7 per cent, 44.7 per cent, and 9.6 per cent, respectively. The value of all wire products in 1914 was $6,349,726 less than in 1909, a decrease of 3.7 per cent.

Size of establishments.—Statistics for the establishments with products valued at less than $1,000,000, and for those with products valued at $1,000,000 and over, are given in Table 72, for 1914 and 1909.

Distribution of establishments, by states, according to character of business.—Table 73 shows the number of establishments, by states, and the number engaged in the manufacture of the principal classes of wire products in 1914 and 1909.

There were 99 establishments drawing wire in 1914 and 93 in 1909. In 1914 there were 69 that drew iron or steel wire; 28 drew copper wire; 28 brass wire; 9, wire of German silver; and 8, wire of other metal or alloys—bronze, copper-clad steel, nickel and nickel alloys, resistance composition, silver, and zinc.

Table 72

VALUE OF PRODUCT PER ESTABLISHMENT.	Census year.	THE WIRE INDUSTRY. Total. Number of establishments.	Total. Value of products.	Wire mills (wire rods purchased). Number of establishments.	Wire mills (wire rods purchased). Value of products.	Wire departments of rolling mills and other concerns. Number of establishments.	Wire departments of rolling mills and other concerns. Value of products.
Total	1914	99	$172,600,546	54	$81,841,012	45	$90,759,534
	1909	93	180,083,522	56	84,486,518	37	95,597,004
Less than $1,000,000	1914	53	15,911,568	33	11,377,387	20	4,534,181
	1909	52	21,260,888	39	15,070,899	13	6,189,089
$1,000,000 and over	1914	46	156,688,978	21	70,463,625	25	86,225,353
	1909	41	158,822,634	17	69,415,619	24	89,407,015
Per cent of total: Less than $1,000,000	1914	54.5	9.2	63.0	13.9	44.4	5.0
	1909	55.9	11.8	69.6	17.8	35.1	6.5
$1,000,000 and over	1914	45.5	90.8	37.0	86.1	55.6	95.0
	1909	44.1	88.2	30.4	82.2	64.9	93.5
Average per establishment	1914	.....	$1,743,440	.....	$1,515,576	.....	$2,016,870
	1909	.....	$1,936,382	.....	$1,508,688	.....	$2,583,703

Table 73

STATE.	TOTAL. Number of establishments. 1914	1909	Number of wire mills. 1914	1909	Number of departments of rolling mills and other concerns. 1914	1909	NUMBER OF WIRE-DRAWING ESTABLISHMENTS MANUFACTURING SPECIFIED PRODUCTS. Steel and iron—Wire. 1914	1909	Coated wire. 1914	1909	Wire nails and spikes. 1914	1909	Wire brads, tacks, and staples. 1914	1909	Barbed wire. 1914	1909	Wire rope and strand. 1914	1909	Woven-wire fence and poultry netting. 1914	1909	Other woven and fabricated wire products. 1914	1909	Copper—Wire. 1914	1909	Insulated wire, 1914.	Woven-wire products. 1914	1909	Other fabricated wire products. 1914	1909	Other metals and alloys. Brass. 1914	1909	German silver. 1914	1909	All other. 1914	1909
United States	99	93	54	56	45	37	69	59	40	37	37	36	24	24	27	26	12	12	26	23	41	34	28	27	9	3	2	4	3	28	15	9	5	8	8
Wire mills	54	56	54	56	....	....	45	34	22	19	18	19	8	9	10	11	8	8	11	10	23	19	17	17	6	3	1	2	2	10	7	1	1	7	5
Wire departments of rolling mills and other concerns	45	37	....	....	45	37	24	25	18	18	19	17	16	15	17	15	4	4	15	13	18	15	11	10	3	...	1	2	1	18	8	8	4	1	3
Alabama	2	....	....	....	2	....	2	....	2	....	2	....	2	....	2	....	....	....	2	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Colorado	1	1	....	....	1	1	1	1	1	1	1	1	1	1	....	....	....	....	1	1	1	1	1	....	....	....	....	....	....	....	....	....	....	....	....
Connecticut	15	12	6	3	9	9	5	2	3	1	1	1	....	....	....	....	1	1	1	1	1	1	6	6	2	2	1	....	....	10	8	6	4	1	3
Georgia	1	1	....	....	1	1	1	1	....	....	1	1	....	....	1	1	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Illinois	11	10	9	7	2	3	9	6	7	8	8	8	6	7	7	7	1	2	8	8	7	7	2	2	1	....	1	1	....	1	....	....	....	....	....
Indiana	4	4	2	2	2	2	4	4	3	3	4	4	2	3	3	4	....	1	3	4	2	1	....	....	....	....	....	....	....	....	....	....	....	....	....
Kentucky	1	1	....	1	1	....	1	1	1	....	1	1	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Massachusetts	9	11	8	10	1	1	9	10	4	5	2	2	2	1	....	1	4	2	....	1	7	7	3	3	1	....	....	2	2	2	1	....	1	1	....
Michigan	2	1	....	1	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	2	....	1	....	....	....
New Jersey	10	11	9	7	1	4	6	7	3	3	1	1	....	....	....	....	2	2	....	....	5	3	5	6	2	....	....	1	....	5	2	1	....	4	1
New York	11	8	6	7	5	1	4	2	....	1	1	1	1	1	....	....	1	1	1	1	2	2	7	5	1	1	....	....	....	5	4	1	....	2	3
Ohio	10	11	5	6	5	5	10	11	6	7	6	6	3	5	4	4	1	1	2	1	5	6	....	....	....	....	....	....	....	....	....	....	....	....	....
Pennsylvania	17	16	7	8	10	8	15	12	10	8	7	7	7	5	8	6	2	2	7	5	8	5	1	2	1	....	....	....	1	2	....	....	....	....	1
Rhode Island	3	3	1	1	2	2	1	2	....	....	1	1	....	....	....	....	....	....	....	....	1	....	2	2	1	....	....	....	....	....	....	....	....	....	....
Virginia	....	1	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....
Wisconsin	2	2	1	2	1	....	1	....	....	....	1	2	....	1	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....

GENERAL STATISTICS FOR WIRE MILLS.

This section of the report on the wire industry deals exclusively with the classified industry, which is confined to the establishments operated as independent wire-drawing mills. Their products constitute in value barely half of the total wire products. The statistics here given correspond with those presented under the industry designation "wire" in the general tables of the census reports.

Table 74 summarizes the statistics of establishments engaged in the manufacture of wire for the censuses of 1914 and 1909, and gives percentages of increase

Table 74

	WIRE MILLS USING PURCHASED RODS.		Per cent of increase,[1] 1909–1914.
	1914	1909	
Number of establishments	54	56	.....
Persons engaged	19,740	19,945	−1.0
Proprietors and firm members	18	15	.....
Salaried employees	2,122	1,846	15.0
Wage earners (average number)	17,600	18,084	−2.7
Primary horsepower	83,940	71,959	16.6
Capital	$64,013,668	$60,157,073	6.4
Salaries and wages	13,999,007	12,515,070	11.9
Salaries	2,978,278	2,199,348	35.4
Wages	11,020,729	10,315,722	6.8
Paid for contract work	17,410	6,510	167.4
Rent and taxes (including internal revenue)	745,484	241,658	208.5
Cost of materials	56,424,494	60,542,931	−6.8
Value of products	81,841,012	84,486,518	−3.1
Value added by manufacture (value of products less cost of materials)	25,416,518	23,943,587	6.1

[1] A minus sign (−) denotes decrease.

Comparisons with the censuses of 1904 and prior years are misleading. There were 25 establishments in the classified industry in 1904, with 4,737 wage earners and products valued at $37,914,419, and 29 establishments in 1899, with 1,603 wage earners and products valued at $9,421,238. There was a large development during the decade 1899–1909, but not at the rate these figures, compared with those given in the above table for 1909, would indicate, for the reason that in the earlier years a much larger proportion of the wire drawing was done in the wire departments of rolling mills, the data for which do not figure in the classified industry. An approximate idea of the growth of the iron and steel wire industry as a whole is gained from the statistics of production of wire rods. The output of iron and steel wire rods in 1899 was 916,587 long tons, and in 1904, 1,792,704 tons; in 1909, 2,295,279 tons, and in 1914, 2,377,691 tons, showing increases for the successive five-year periods of 95.6 per cent, 28 per cent, and 3.6 per cent, respectively.

The cost of materials in 1914 represented 68.9 per cent of the total value of products and in 1909, 71.7 per cent; and salaries and wages 17.1 per cent in 1914, and in 1909, 14.8 per cent.

Summary, by states.—Table 75 summarizes the more important statistics of the industry as a whole and for Massachusetts and New York, the only states that can be separately shown, for 1914.

Table 75

	WIRE MILLS USING PURCHASED RODS: 1914.					WIRE MILLS USING PURCHASED RODS: 1914.			
	United States.	Massachusetts.	New York.	All other states.[1]		United States.	Massachusetts.	New York.	All other states.[1]
Number of establishments	54	8	6	40	Value added by manufacture:				
Wage earners:					Amount	$25,416,518	$3,733,108	$2,092,329	$19,591,081
Average number	17,600	2,899	1,384	13,317	Per cent distribution	100.0	14.7	8.2	77.1
Per cent distribution	100.0	16.5	7.9	75.7	Per cent of increase,[2] 1909–1914:				
Value of products:					Wage earners	−2.7	−22.0	−3.8	3.0
Amount	$81,841,012	$8,389,073	$5,779,462	$67,672,477	Value of products	−3.1	−12.4	−42.6	4.4
Per cent distribution	100.0	10.3	7.1	82.7	Value added by manufacture	6.1	−7.6	−6.7	10.9

[1] All other states embrace: Connecticut, 6 establishments; Illinois, 9; Indiana, 2; New Jersey, 9; Ohio, 5; Pennsylvania, 7; Rhode Island, 1; and Wisconsin, 1.
[2] A minus sign (−) denotes decrease.

The leading states in value of products, in 1914, and those with products in excess of $5,000,000, were New Jersey, Illinois, Massachusetts, Ohio, and New York. For the industry as a whole, including the wire departments of rolling mills, the five leading states and those with products in excess of $10,000,000 were Pennsylvania, New Jersey, Illinois, Ohio, and Massachusetts.

Persons engaged in the industry.—Table 76 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, and average number of wage earners, distributed by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Table 77 gives, for the several classes of persons engaged in the industry, the percentages of increase from 1909 to 1914, and the per cent distribution at the two censuses.

The average number of wage earners for each state as reported at the censuses of 1914, 1909, and 1904 is given in Table 89. The distribution of the average number by sex and age is not shown for the states, but Table 90 gives such a distribution of the number employed on December 15, or the nearest representative day.

Table 76

CLASS.	Census year.	PERSONS ENGAGED IN WIRE MILLS USING PURCHASED RODS.				
		Total.	Male.	Female.	Per cent of total. Male.	Per cent of total. Female.
All classes	1914	19,740	18,682	1,058	94.6	5.4
	1909	19,945	18,904	1,041	94.8	5.2
Proprietors and officials	1914	445	438	7	98.4	1.6
	1909	399	395	4	99.0	1.0
Proprietors and firm members	1914	18	14	4	77.8	22.2
	1909	15	13	2	86.7	13.3
Salaried officers of corporations	1914	76	74	2	97.4	2.6
	1909	78	77	1	98.7	1.3
Superintendents and managers	1914	351	350	1	99.7	0.3
	1909	306	305	1	99.7	0.3
Clerks and other subordinate salaried employees	1914	1,695	1,352	343	79.8	20.2
	1909	1,462	1,240	222	84.8	15.2
Wage earners (average number)	1914	17,600	16,992	708	96.0	4.0
	1909	18,084	17,269	815	95.5	4.5
16 years of age and over	1914	17,590	16,884	706	96.0	4.0
	1909	17,992	17,190	802	95.5	4.5
Under 16 years of age	1914	10	8	2	80.0	20.0
	1909	92	79	13	85.9	14.1

Table 77

CLASS.	PERSONS ENGAGED IN WIRE MILLS USING PURCHASED RODS.									
	Per cent of increase,[1] 1909–1914.			Per cent distribution.					
				Total.		Male.		Female.	
	Total.	Male.	Female.	1914	1909	1914	1909	1914	1909
All classes	−1.0	−1.2	1.6	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials	11.5	10.9	.....	2.2	2.0	2.4	2.1	0.7	0.4
Proprietors and firm members	.....	.....	.....	0.1	0.1	0.1	0.1	0.4	0.2
Salaried officers of corporations	.....	.....	.....	0.4	0.4	0.4	0.4	0.2	0.1
Superintendents and managers	14.7	14.8	.....	1.8	1.5	1.9	1.6	0.1	0.1
Clerks and other subordinate salaried employees	15.9	9.0	54.5	8.6	7.3	7.2	6.6	32.4	21.3
Wage earners (average number)	−2.7	−2.2	−13.1	89.2	90.7	90.4	91.3	66.9	78.3
16 years of age and over	−2.2	−1.8	−12.0	89.1	90.2	90.4	90.8	66.7	77.1
Under 16 years of age	−89.1	−89.9	−84.6	0.1	0.5	(2)	0.5	0.2	1.2

[1] A minus sign (−) denotes decrease; percentages are omitted where base is less than 100.

[2] Less than one-tenth of 1 per cent.

Wage earners employed, by months.—Table 78 gives for the industry the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

Table 78

MONTH.	WAGE EARNERS IN WIRE MILLS USING PURCHASED RODS.			
	Number.[1]		Per cent of maximum.	
	1914	1909	1914	1909
January	18,483	17,763	98.2	90.4
February	18,733	18,147	99.6	92.4
March	18,816	17,604	100.0	89.6
April	18,363	17,131	97.6	87.2
May	17,864	17,432	94.9	88.8
June	17,575	17,862	93.4	90.9
July	17,200	17,864	91.4	91.0
August	17,006	17,673	90.4	90.0
September	17,329	18,206	92.1	92.7
October	17,207	18,580	91.4	94.6
November	16,369	19,091	87.0	97.2
December	16,255	19,641	86.4	100.0

[1] The figures represent the number employed on the 15th of each month, or the nearest representative day.

The increase in 1909 from April, the minimum month, to December, reflects the general improvement in trade conditions which took place during the year, while the decrease in 1914, from March, the maximum month, to December, is attributable to the business depression caused by the European war.

Prevailing hours of labor.—In Table 79 the average number of wage earners reported for 1914 and 1909 for the industry has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment is classified as a total even though a few employees worked a greater or less number of hours.

In 1909 only four-tenths of 1 per cent were in establishments where the prevailing hours were 54 per week or less, whereas in 1914, 30.7 per cent were in this class. A drift toward shorter hours of employment shows for every state. In Connecticut and Pennsylvania, where the change is least pronounced, there were 51.4 per cent of the total number in the former state, in the 60 hours or more class in 1914, and 55.4 per cent in 1909; and in the latter state there were 46.2 per cent in 1914 and 64.8 per cent in 1909. The average number of hours of labor per week, figuring the lower group at 48; "between 48 and 54" at 51; "between 54 and 60" at 57; and "between 60 and 72" at 66, was 56.7 hours in 1914 and 58.7 hours in 1909; an average decrease, for the five-year period, of 2 hours per week.

Table 79

STATE.	Census year.	WIRE MILLS USING PURCHASED RODS—AVERAGE NUMBER OF WAGE EARNERS.						
		Total.	In establishments where the prevailing hours of labor per week were—					
			48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.
All industries	1914	17,600	669	4,396	333	4,561	6,824	817
	1909	18,084	.....	76	1	7,626	10,232	149
Connecticut	1914	786	.....	.....	.....	382	404	.....
	1909	643	.....	.....	.....	287	356	.....
Illinois	1914	2,763	655	.....	.....	1,038	816	254
	1909	2,516	.....	.....	.....	107	2,260	149
Indiana	1914	623	.....	.....	.....	.....	623	.....
	1909	451	.....	.....	.....	.....	451	.....
Massachusetts	1914	2,899	.....	.....	.....	870	2,029	.....
	1909	3,718	.....	.....	1	682	3,035	.....
New Jersey	1914	5,821	.....	4,396	.....	1,299	126	.....
	1909	5,646	.....	.....	.....	5,559	87	.....
New York	1914	1,384	.....	.....	298	1	1,085	.....
	1909	1,439	.....	.....	.....	640	799	.....
Ohio	1914	1,725	.....	.....	.....	332	1,393	.....
	1909	2,096	.....	76	.....	.....	2,020	.....
Pennsylvania	1914	1,248	14	.....	35	622	14	563
	1909	946	.....	.....	.....	333	613	.....

Character of ownership.—Establishments under corporate ownership dominate the industry. Table 80 gives the comparative figures for number of establishments, wage earners, and value of products, 1914 and 1909, for the corporations and those of other form of ownership. The 7 establishments of the latter group comprise 3 owned by individuals and 4 by firms.

Table 80

CHARACTER OF OWNERSHIP.	WIRE MILLS USING PURCHASED RODS.		PER CENT OF TOTAL.	
	1914	1909	1914	1909
Number of establishments	54	56	100.0	100.0
Corporation	47	49	87.0	87.5
Other	7	7	13.0	12.5
Average number of wage earners	17,600	18,084	100.0	100.0
Corporation	17,372	17,836	98.7	98.6
Other	228	248	1.3	1.4
Value of products	$81,841,012	$84,486,518	100.0	100.0
Corporation	81,277,191	82,802,572	99.3	98.0
Other	563,821	1,683,946	0.7	2.0
Average value of products per establishment	1,515,574	1,508,688	.....	.....
Corporation	1,729,302	1,689,848	.....	.....
Other	80,546	240,569	.....	.....

Size of establishments.—The tendency of the industry to become concentrated in large establishments is indicated by the statistics given in Table 81.

The establishments of the "$1,000,000 and over" group constituted 38.9 per cent of the total number of establishments and reported 80.7 per cent of all wage earners, 86.1 per cent of value of products, and 83.6 per cent of the total value added by manufacture; all marked increases over 1909.

Table 81

VALUE OF PRODUCT PER ESTABLISHMENT.	WIRE MILLS USING PURCHASED RODS.		PER CENT DISTRIBUTION.	
	1914	1909	1914	1909
Number of establishments	54	56	100.0	100.0
Less than $20,000	3	4	5.5	7.1
$20,000 to $100,000	9	5	16.7	8.9
$100,000 to $1,000,000	21	30	38.9	53.6
$1,000,000 and over	21	17	38.9	30.4
Average number of wage earners	17,600	18,084	100.0	100.0
Less than $20,000	17	12	0.1	0.1
$20,000 to $100,000	161	108	0.9	0.6
$100,000 to $1,000,000	3,223	4,659	18.3	25.8
$1,000,000 and over	14,199	13,305	80.7	73.6
Value of products	$81,841,012	$84,486,518	100.0	100.0
Less than $20,000	29,983	36,337	(1)	(1)
$20,000 to $100,000	477,697	259,017	0.6	0.3
$100,000 to $1,000,000	10,869,707	14,775,545	13.3	17.5
$1,000,000 and over	70,463,625	69,415,619	86.1	82.2
Value added by manufacture	25,416,518	23,943,587	100.0	100.0
Less than $20,000	10,760	15,759	(1)	0.1
$20,000 to $100,000	213,741	91,282	0.8	0.4
$100,000 to $1,000,000	3,957,119	5,102,294	15.6	21.3
$1,000,000 and over	21,234,898	18,734,252	83.6	78.2

[1] Less than one-tenth of 1 per cent.

Table 82 shows the size of establishments in 1914 and 1909, as measured by the number of wage earners employed, for the industry as a whole, and for the 8 states employing 500 or more wage earners in 1914.

Table 82

STATE.	Census year.	TOTAL.		WIRE MILLS USING PURCHASED RODS—ESTABLISHMENTS EMPLOYING—													
				1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners	
		Establishments.	Wage earners (average number).	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States	1914	54	17,600	4	8	5	71	7	274	3	249	13	2,124	14	5,094	5	2,936	3	6,844
	1909	56	18,084	3	5	6	83	5	181	8	591	14	2,499	13	4,307	4	2,579	3	7,839
Connecticut	1914	6	786	1	1	1	18	1	38	.....	.....	2	365	1	364	.....	.....	.....	.....
	1909	3	643	.....	.....	.....	.....	1	21	.....	.....	.....	.....	2	622	.....	.....	.....	.....
Illinois	1914	9	2,763	.....	.....	.....	.....	1	50	.....	.....	3	403	3	1,122	2	1,188	.....	.....
	1909	7	2,516	.....	.....	.....	.....	.....	.....	1	62	3	439	.....	.....	3	2,015	.....	.....
Indiana	1914	2	623	.....	.....	.....	.....	.....	.....	.....	.....	1	234	1	389	.....	.....	.....	.....
	1909	2	451	.....	.....	.....	.....	.....	.....	.....	.....	1	197	1	254	.....	.....	.....	.....
Massachusetts	1914	8	2,899	1	3	.....	.....	.....	.....	.....	.....	3	474	3	1,108	.....	.....	1	1,314
	1909	10	3,718	2	4	.....	.....	.....	.....	.....	.....	3	428	4	1,162	.....	.....	1	2,124
New Jersey	1914	9	5,821	1	3	1	8	1	25	.....	.....	2	266	3	1,148	.....	.....	1	4,271
	1909	7	5,646	.....	.....	1	14	.....	.....	2	158	.....	.....	3	1,088	.....	.....	1	4,386
New York	1914	6	1,384	1	1	.....	.....	1	42	1	65	.....	.....	2	629	1	647	.....	.....
	1909	7	1,439	1	1	1	18	.....	.....	1	60	2	387	1	409	1	564	.....	.....
Ohio	1914	5	1,725	.....	.....	.....	.....	.....	.....	2	184	2	382	.....	.....	.....	.....	1	1,159
	1909	6	2,096	.....	.....	.....	.....	.....	.....	2	151	3	616	.....	.....	.....	.....	1	1,329
Pennsylvania	1914	7	1,248	.....	.....	2	28	3	119	.....	.....	.....	.....	.....	.....	2	1,101	.....	.....
	1909	8	946	.....	.....	1	18	3	113	2	160	1	197	1	458	.....	.....	.....	.....

Approximately two-fifths of all wage earners are reported by the few establishments employing over 1,000 wage earners. The groups that cover from 101 to 500 wage earners constitute one-half of the establishments and comprise two-fifths of the wage earners.

Engines and power.—Table 83 shows, for 1914, 1909, and 1904, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated by the establishments reporting.

This table shows an increase in primary power amounting to 11,981 horsepower, or 16.6 per cent, from 1909 to 1914, due to the increase in rented power. The use of rented power, almost wholly electric, has greatly increased since 1904, when 347 horsepower of this character, representing 1.3 per cent of the total primary power, was reported. In 1909 the amount of such power had increased to 3,036 horsepower, or 4.2 per cent, of the total, and in 1914 to 16,503 horsepower, or 19.7 per cent of the total. The increase in the use of electric motors run by current generated within the same establishment has kept pace with that

of rented power. The electric-motor equipment in the aggregate had a rated capacity of 39,458 horsepower in 1914, equal to 47 per cent of the total power owned and rented, as compared with 26.2 per cent in 1909 and 6.6 per cent in 1904. This increase in electric power equipment is to a considerable extent due to the growing practice of having separate motors for different machines, all of which are not in operation at any one time. The capacity of the owned prime-power generators is, as a rule, commensurate with the maximum power requirements of a plant, where the plant is operated with owned power; but where operated with electric power whether rented or generated, and to the extent that electric power is used if a plant is operated with both owned and rented power, the horsepower capacity of the electric motors may be largely in excess of the quantity of electric power rented or generated.

The increase in rented power no doubt has some influence on owned power, the total for which decreased from 68,923 horsepower in 1909 to 67,437 in 1914, due to a decrease in steam and water powers.

Table 83

POWER.	WIRE MILLS USING PURCHASED RODS.								
	Number of engines or motors.			Horsepower.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	919	443	114	83,940	71,959	25,856	100.0	100.0	100.0
Owned	255	315	114	67,437	68,923	25,509	80.3	95.7	98.7
Steam engines and turbines [1]	218	268	91	63,015	63,516	23,696	75.1	88.1	91.6
Internal-combustion engines	22	28	9	3,429	3,256	759	4.1	4.5	2.9
Water wheels, turbines, and motors	15	19	14	993	2,151	1,054	1.2	3.0	4.1
Rented	664	128	(2)	16,503	3,036	347	19.7	4.2	1.3
Electric	664	128	(2)	16,463	3,031	347	19.6	4.2	1.3
Other				40	5		(3)	(3)	
Electric	1,636	1,019		39,458	18,824	1,710	100.0	100.0	100.0
Rented	664	128	(2)	16,463	3,031	347	41.7	16.1	20.3
Generated by establishments reporting	972	891	50	22,995	15,793	1,363	58.3	83.9	79.7

[1] Figures for horsepower include for 1909 and 1904 the amounts reported under the head of "other" owned power.
[2] Figures not available.
[3] Less than one-tenth of 1 per cent.

Fuel.—There was consumed by the wire mills that constitute the classified industry in 1914, 30,067 long tons of anthracite coal, 523,603 short tons of bituminous coal, 14,329 short tons of coke, 88,979 barrels of oil, and 415,873,000 cubic feet of gas. As these plants did not cover all wire-drawing establishments and the fuel consumption of a large proportion of them is covered in the returns for rolling mills, a presentation of the fuel for the classified industry is of little significance.

SPECIAL STATISTICS RELATING TO MATERIALS, PRODUCTS, AND EQUIPMENT.

The statistics regarding materials, products, and equipment here presented cover all wire-drawing mills. In general the tables show the statistics for the wire industry as a whole, for the independent wire mills, and for those operated as departments of rolling mills and other concerns.

Materials.—Table 84 gives in detail the statistics for wire rods consumed in 1914 and 1909, and for wire purchased and used by establishments in the industry either for redrawing or in the manufacture of wire goods. The cost of the principal materials, wire rods and purchased wire, is shown for all wire-drawing establishments, but other material expense can be given only for the establishments that constitute the classified industry. The materials included in "all other materials" consist of coating metals, acids, oil, lime, containers, mill supplies, etc. Quantities are given in short tons.

Table 84

KIND.	THE WIRE INDUSTRY—MATERIALS USED (TONS OF 2,000 POUNDS).						PER CENT OF INCREASE,[1] 1909–1914.		
	Total.		Wire mills (wire rods purchased).		Wire departments of rolling mills and other concerns.		Total.	Wire mills.	Wire departments.
	1914	1909	1914	1909	1914	1909			
Total cost			$56,424,494	$60,542,931					
Wire rods	$104,621,056	$112,799,516	$43,374,762	$50,810,983	$61,246,293	$61,988,533	−7.2	−14.6	−1.2
Steel:									
Tons	2,495,201	2,514,504	847,883	850,729	1,647,318	1,663,775	−0.7	−0.3	−1.0
Cost	$59,161,732	$67,439,887	$21,609,338	$23,021,867	$37,552,394	$44,418,020	−12.3	−6.1	−15.5
Produced by consumer—									
Tons	2,030,735	2,022,851	395,694	361,065	1,635,041	1,641,786	1.4	9.6	−0.4
Assigned cost	$46,356,401	$53,462,671	$9,091,973	$9,716,501	$37,264,428	$43,746,170	−13.3	−6.4	−14.8
Purchased—									
Tons	464,466	511,653	452,189	489,664	12,277	21,989	−9.2	−7.7	−44.2
Cost	$12,805,331	$13,977,216	$12,517,365	$13,305,366	$287,966	$671,850	−8.4	−5.9	−57.1

[1] A minus sign (−) denotes decrease.

Table 84—Continued.

KIND.	THE WIRE INDUSTRY—MATERIALS USED (TONS OF 2,000 POUNDS).						PER CENT OF INCREASE,[1] 1909–1914.		
	Total.		Wire mills (wire rods purchased).		Wire departments of rolling mills and other concerns.		Total.	Wire mills.	Wire departments.
	1914	1909	1914	1909	1914	1909			
Wire rods—Continued.									
Steel—Continued.									
By kind of steel—									
Bessemer steel—									
Tons	948,552	1,148,353	539,379	558,048	409,173	590,305	−17.4	−3.3	−30.7
Cost	$21,046,599	$28,340,415	$12,081,408	$13,936,178	$8,965,191	$14,404,237	−27.7	−13.3	−37.7
Open-hearth steel—									
Basic—									
Tons	1,483,908	1,255,747	279,200	233,105	1,204,708	1,022,642	18.2	19.8	17.8
Cost	$36,150,876	$35,046,106	$8,368,034	$6,995,310	$27,782,842	$28,350,796	3.2	25.0	−2.0
Acid—									
Tons	56,527	103,509	23,235	52,856	33,292	50,653	−45.4	−56.0	−34.2
Cost	$1,651,223	$3,486,071	$860,643	$1,841,051	$790,580	$1,645,020	−52.6	−53.2	−51.9
Crucible and other steel—									
Tons	6,154	6,895	6,009	6,720	145	175	−10.7	−10.6	−17.1
Cost	$313,034	$567,265	$299,253	$549,328	$13,781	$17,937	−44.8	−45.5	−23.2
Iron—									
Tons	2,579	4,849	2,579	1,055	.....	3,794	−46.8	144.5	−100.0
Cost	$121,651	$207,846	$121,651	$62,203	.....	$145,643	−40.6	95.6	−100.0
Copper—									
Tons	141,214	151,951	73,545	102,394	67,669	49,557	−7.1	−28.2	36.5
Cost	$39,653,902	$40,916,084	$20,214,926	$27,462,312	$19,438,976	$13,453,772	3.1	−26.4	44.5
Brass—									
Tons	19,513	[2]	1,950	[2]	17,563	[2]	.....	.....	.....
Cost	$4,758,406	$4,235,699	$695,107	$264,601	$4,063,299	$3,971,098	34.2	440.0	7.1
Other metal, cost	$925,365		$733,741		$191,624				
Bronze—									
Tons	107	[2]	107	[2]	.....	[2]	.....	.....	.....
Cost	$32,293	.....	$32,293	.....	.....	.....	.....	.....	.....
German silver—									
Tons	375	[2]	[2]	[2]	375	[2]	.....	.....	.....
Cost	$149,871	.....	$47	.....	$149,824	.....	.....	.....	.....
All other, cost	$743,201	[2]	$701,401	[2]	$41,800	[2]	.....	.....	.....
Wire purchased, plain or coated	$1,994,839	$2,855,911	$537,759	$429,390	$1,457,080	$2,426,521	−30.1	25.2	−40.0
Steel or iron—									
Tons	36,290	[2]	8,875	[2]	27,415	[2]	.....	.....	.....
Cost	$1,816,382	.....	$359,302	.....	$1,457,080	.....	.....	.....	.....
Copper—									
Tons	599	[2]	599	[2]	.....	.....	.....	.....	.....
Cost	$178,457	.....	$178,457	.....	.....	.....	.....	.....	.....
Fuel and rent of power	.....	.....	$1,813,172	$1,640,172	.....	.....	.....	10.5	.....
All other materials	.....	.....	$10,698,800	$7,662,386	.....	.....	.....	39.6	.....

[1] A minus sign (−) denotes decrease.

[2] Figures not available.

Open-hearth steel rods formed 61.7 per cent of the total quantity of steel rods used in 1914, and Bessemer steel 38 per cent. In 1909 the proportions were 54.1 per cent for open-hearth steel and 45.7 per cent for Bessemer steel. In each year the proportion for crucible and other steels was approximately one-fourth of 1 per cent. The purchased wire reported includes both plain and coated wire. On a quantity basis the steel and iron rods constituted approximately 94 per cent of the weight of all metals drawn into wire; on a basis of value they formed 56.7 per cent of the cost of all rods, copper formed 37.9 per cent, brass 4.5, and other metals and alloys less than 1 per cent. In 1909 steel and iron formed 60 per cent of the total cost, copper, 36.3 per cent, and brass and other metals and alloys, 3.8 per cent.

Products.—Table 85 gives the statistics of products, in detail, for 1914 and 1909, with segregation for the "wire mills" and the "wire departments of rolling mills and other concerns."

Table 85

KIND.	THE WIRE INDUSTRY—PRODUCTS (TONS OF 2,000 POUNDS).						PER CENT OF INCREASE,[1] 1909–1914.		
	Total.		Wire mills (wire rods purchased).		Wire departments of rolling mills and other concerns.		Total.	Wire mills.	Wire departments.
	1914	1909	1914	1909	1914	1909			
Total value of products	$172,600,546	$180,083,522	$81,841,012	$84,486,518	$90,759,534	$95,597,004	−4.2	−3.1	−5.4
Wire and manufactures of wire	166,999,888	173,349,614	78,150,487	79,249,869	88,849,401	94,099,745	−3.7	−1.4	−5.6
Steel and iron—									
Tons	2,465,383	2,471,858	835,928	821,929	1,629,455	1,649,929	−0.3	1.7	−1.3
Value	$116,215,503	$120,585,637	$48,809,661	$47,934,204	$67,405,842	$72,651,433	−3.6	1.8	−7.2
Plain wire—									
Tons	459,909	472,046	206,575	188,846	253,334	283,200	−2.6	9.4	−10.5
Value	$22,316,778	$22,632,230	$12,921,557	$11,349,868	$9,395,221	$11,282,362	−1.4	13.9	−16.7
Coated wire—									
Tons	374,478	354,405	156,016	155,059	218,462	199,346	5.7	0.6	9.6
Value	$15,949,531	$16,212,851	$7,123,026	$7,473,167	$8,826,505	$8,739,684	−1.6	−4.7	1.0
Wire nails and spikes—									
Kegs (100 lbs.)	12,886,634	13,926,861	3,209,925	3,449,753	9,676,709	10,477,108	−7.5	−7.0	−7.6
Value	$23,368,633	$27,575,774	$6,048,598	$7,142,047	$17,320,035	$20,433,727	−15.3	−15.3	−15.2
Wire brads, tacks, and staples—									
Tons	33,335	28,125	9,188	7,334	24,147	20,791	18.5	25.3	16.1
Value	$1,324,948	$1,324,170	$386,271	$320,224	$938,677	$1,003,946	0.1	20.6	−6.5

[1] A minus sign (−) denotes decrease.

Table 85—Continued.

KIND.	THE WIRE INDUSTRY—PRODUCTS USED (TONS OF 2,000 POUNDS).						PER CENT OF INCREASE,[1] 1909–1914		
	Total.		Wire mills (wire rods purchased).		Wire departments of rolling mills and other concerns.		Total.	Wire mills.	Wire departments.
	1914	1909	1914	1909	1914	1909			
Wire and manufactures of wire—Continued.									
Steel and iron—Continued.									
Barbed wire—									
Tons	343,693	323,595	69,232	76,268	274,461	247,297	6.2	−9.2	11.0
Value	$13,764,367	$13,881,517	$2,823,668	$3,343,856	$10,940,699	$10,537,661	−0.9	−15.6	3.8
Wire rope and strand—									
Tons	52,735	45,303	43,217	34,140	9,518	11,163	16.4	26.6	−14.7
Value	$7,973,537	$6,683,771	$6,881,138	$5,450,064	$1,092,399	$1,233,707	19.3	26.3	−11.5
Woven-wire fence and poultry netting—									
Tons	411,460	426,927	128,379	115,889	283,081	311,038	1.7	18.2	−4.5
Value	$19,795,812		$6,763,469	$6,724,077	$13,032,343	$15,945,393	−0.2	14.2	−6.3
Other woven-wire products—									
Tons	22,721		8,614		14,107				
Value	$2,822,689	$22,669,470	$915,490		$1,907,199				
Other fabricated iron and steel wire products—									
Tons	122,720	125,145	54,211	71,906	68,509	53,239	−1.9	−24.6	28.7
Value	$8,899,208	$9,605,854	$4,946,444	$6,130,901	$3,952,764	$3,474,953	−7.4	−19.3	13.8
Copper—									
Bare wire—									
Tons	84,921	139,482	54,210	102,418	30,711	37,064	.....	.....	.....
Value	$26,206,024	[2]$42,336,274	$16,177,678	$30,736,728	$10,028,346	$11,599,546	.....	.....	.....
Insulated wire[2]—									
Tons	48,386		32,410		15,976				
Value	$15,709,244		$10,855,232		$4,854,012				
Woven and other fabricated copper-wire products—									
Tons	2,130	14,749	499	186	1,631	14,563	.....	.....	.....
Value	$1,013,282	$4,847,890	$291,380	$94,918	$721,902	$4,752,972	.....	.....	.....
Brass-wire and fabricated brass-wire products—									
Pounds	39,614,500		4,361,148		35,253,352				
Value	$6,366,342		$850,017		$5,516,325				
German silver—									
Pounds	749,224	$5,579,813	203	$484,019	749,021	$5,095,794	40.8	316.6	14.6
Value	$238,078		$170		$237,908				
All other metals and alloys—									
Pounds	[4]6,180,174		5,344,527		835,647				
Value	$1,251,415		$1,166,349		$85,066				
Finished products, other than wire and wire manufactures	$2,581,000	[5]$6,501,069	$2,088,590	$5,083,899	$492,410	$1,417,170	.....	.....	.....
All other products, including scrap, dross, etc	$2,692,302		$1,439,465		$1,252,837				
Amount received for custom work and repairing	$327,356	$232,839	$162,470	$152,750	$164,886	$80,089	.....	.....	.....

[1] A minus sign (−) denotes decrease.
[2] Value of insulated wire and cable made by all establishments: 1914, $69,505,573; 1909, $51,624,737.
[3] Does not include the increase in value due to insulation of insulated wire. Value of bare wire (included) used for making insulated wire, $5,702,870.
[4] Includes copper-clad steel, nickel, and nickel alloys, resistance composition, silver and zinc.
[5] Includes value of insulation of insulated wire.

The wire departments of rolling mills and other concerns produced in 1914, 66.1 per cent of the total tonnage of wire and wire goods from steel and iron, the greater part of the production of wire from brass and other metals and alloys, and 35.7 per cent of wire from copper, as compared with 66.7 per cent from steel and iron, and 33.5 per cent from copper in 1909.

The manufacture of insulated wire and cable to the value of $15,709,244 was reported by wire-drawing establishments in 1914. The greater portion of the insulated wire production is made by establishments classed as manufacturers of "electrical machinery, apparatus, and supplies," the total production by all establishments in 1914 amounting in value to $69,505,573, and in 1909 to $51,624,737.

The quantity of wire drawn is shown in Table 86, by kind of metal for 1914 and 1909, with percentages of increase and distribution.

Table 86

KIND.	WIRE DRAWN (TONS OF 2,000 POUNDS).		PER CENT DISTRIBUTION.		Per cent of increase,[1] 1909–1914.
	1914	1909	1914	1909	
Total	2,597,407	2,553,703	100.0	100.0	1.7
Steel and iron	2,435,530	2,389,136	93.8	93.6	1.9
Copper	138,924	147,156	5.3	5.8	−5.6
Brass	19,491				
Bronze	106	17,411	0.9	0.7	31.8
German silver	375				
Other metals and alloys	2,981				
Wire mills	898,523	890,263	100.0	100.0	0.9
Steel and iron	821,569	787,322	91.4	88.4	4.3
Copper	72,401	101,890	8.1	11.4	−28.9
Brass and all other	4,553	1,051	0.5	0.1	333.2
Wire departments of rolling mills	1,698,884	1,663,440	100.0	100.0	2.1
Steel and iron	1,613,961	1,601,814	95.0	96.3	0.8
Copper	66,523	45,266	3.9	2.7	47.0
Brass and all other	18,400	16,360	1.1	1.0	12.5

[1] A minus sign (−) denotes decrease.

Equipment.—Table 87 shows the number and capacity of the wire-drawing blocks, wire-nail machines, and woven-wire fence machines installed in all wire-drawing mills in 1914 and 1909. It gives the distribution of the equipment between the classified industry, designated as "wire mills," and the wire-drawing departments of iron and steel rolling mills, copper-rolling mills and other concerns.

Table 87

EQUIPMENT.	TOTAL.			WIRE MILLS.		WIRE DEPARTMENTS OF ROLLING MILLS AND OTHER CONCERNS.	
	1914	1909	Per cent of increase.	1914	1909	1914	1909
Wire-drawing blocks:							
Number	51,181	43,697	17.1	33,242	28,119	17,939	15,578
Rod	7,503	(1)	.....	3,005	(1)	4,498	(1)
Redrawing	9,067	(1)	.....	6,565	(1)	2,502	(1)
Fine wire	34,611	(1)	.....	23,672	(1)	10,939	(1)
Annual capacity, tons (2,000 pounds)	3,852,000	3,214,000	19.8	1,249,000	1,065,000	2,603,000	2,149,000
Wire-nail machines:							
Number	5,212	4,428	17.7	1,318	1,207	3,894	3,221
Annual capacity, kegs (100 pounds)	23,904,000	18,757,000	27.4	5,965,000	4,694,000	17,939,000	14,063,000
Woven-wire fence machines:							
Number	583	446	30.7	161	198	422	248
Annual capacity, tons (2,000 pounds)	732,000	481,000	52.2	190,000	135,000	542,000	346,000

[1] Figures not available.

The 51,181 wire-drawing blocks reported in 1914 comprise 7,503 rod blocks, used for drawing the heavier gauges of wire from the rolled-wire rods in one or more drafts; 9,067 redrawing blocks, used for the reduction of wire to finer sizes, the limit being about 20 gauge; and 34,611 fine-wire blocks, for drawing down to sizes below No. 20.

Table 88 gives the statistics pertaining to equipment, 1914, for all establishments, by states, with the states ranked according to wire-drawing capacity.

Table 88

STATE.	EQUIPMENT, 1914.					STATE.	EQUIPMENT, 1914.				
	Wire-drawing blocks—annual capacity, tons.	Wire-nail machines.		Woven-wire fence machines.			Wire-drawing blocks—annual capacity, tons.	Wire-nail machines.		Woven-wire fence machines.	
		Number.	Annual capacity, kegs (100 lbs.).	Number.	Annual capacity, tons.			Number.	Annual capacity, kegs (100 lbs.).	Number.	Annual capacity, tons.
United States	3,852,000	5,212	23,904,000	583	732,000	Massachusetts	209,000	105	224,000	.....	.....
						New Jersey	208,000	30	2,000	.....	.....
Pennsylvania	1,328,000	1,675	8,870,000	210	291,500	Indiana	195,000	317	1,695,000	50	37,000
Illinois	619,000	638	3,197,000	134	214,000	Connecticut	95,000	10	22,000	24	5,000
Ohio	575,000	1,568	4,579,000	27	64,000	New York	82,000	125	200,000	65	6,000
Alabama	228,000	313	2,010,000	59	91,000	Rhode Island	47,000	31	60,000	.....	.....
Colorado	210,000	280	2,400,000	13	22,500	All other states	56,000	120	645,000	1	1,000

DETAIL STATE TABLES.

Tables 89 and 90, which follow, relate exclusively to the establishments constituting the classified industry and include only those operated as wire-drawing mills independent of rod-rolling mills. Table 89 shows, for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products as reported for the industry. Table 90 presents, for 1914, by states, the more detailed statistics of the industry.

TABLE 89.—WIRE (WIRE MILLS USING PURCHASED RODS)—COMPARATIVE SUMMARY, BY STATES: 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.	STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.								Expressed in thousands.		
United States	1914	54	17,600	83,940	$11,021	$56,424	$81,841	New York	1914	6	1,384	4,474	$788	$3,687	$5,779
	1909	56	18,084	71,959	10,316	60,543	84,487		1909	7	1,439	5,455	758	7,824	10,065
	1904	25	4,737	25,856	2,859	30,062	37,914		1904	6	1,179	4,576	637	8,005	9,401
Massachusetts	1914	8	2,899	15,142	2,005	4,656	8,389	All other states	1914	40	13,317	64,324	8,228	48,081	67,673
	1909	10	3,718	10,498	2,218	5,538	9,580		1909	39	12,927	56,006	7,340	47,181	64,842
	1904	5	605	2,985	329	1,039	1,617		1904	14	2,953	18,295	1,893	21,018	26,896

TABLE 90.—WIRE (WIRE MILLS USING PURCHASED RODS)—DETAIL STATEMENT, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.	EXPENSES.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male.	Female.		Officials.	Clerks, etc.
								Maximum month.	Minimum month.								
United States..	54	19,740	18	427	1,352	343	17,600	Mh.18,816	De.16,255	16,764	16,082	672	8	2	$64,013,668	$1,129,383	$1,848,895
Massachusetts.....	8	3,225	10	94	160	62	2,899	Ja. 3,174	De. 2,661	2,933	2,840	90	2	1	8,244,816	197,022	231,322
New York.....	6	1,499	1	19	83	12	1,384	Mh. 1,476	De. 1,305	1,305	1,231	73	1	.....	5,059,349	86,441	124,520
All other states[1].....	40	15,016	7	314	1,109	269	13,317	.....	.....	12,526	12,011	509	5	1	50,709,503	845,920	1,493,053

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					
	Salaries and wages—Continued.	For contract work.	Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage earners.		Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power			Total.	Steam engines.[2]	Internal-combustion engines.[3]	Water wheels and motors.[2]	Electric (rented).	
United States..	$11,020,729	$17,410	$53,929	$691,555	$54,611,322	$1,813,172	$81,841,012	$25,416,518	83,940	63,015	3,469	993	16,463	22,995
Massachusetts.....	2,005,164	15,282	7,588	65,170	4,265,454	390,511	8,389,073	3,733,108	15,142	7,273	20	614	7,235	1,986
New York.....	787,774	.....	15,817	373,624	3,537,830	149,303	5,779,462	2,092,329	4,474	2,165	487	114	1,708	477
All other states[1].....	8,227,791	2,128	30,524	252,761	46,808,038	1,273,358	67,672,477	19,591,081	64,324	53,577	2,962	265	7,520	20,532

[1] All other states embrace: Connecticut, 6 establishments; Illinois, 9; Indiana, 2; New Jersey, 9; Ohio, 5; Pennsylvania, 7; Rhode Island, 1; Wisconsin, 1.
[2] Owned power only.
[3] Includes rented power, other than electric.

PART VI. THE TIN-PLATE AND TERNEPLATE INDUSTRY.

GENERAL STATISTICS.

Description of the industry.—There will be found in the census reports for the Twelfth Census, Manufactures, Part IV, page 109, a history of the tin and terne plate industry in foreign countries and in the United States, and a description of the processes of manufacture. The manufacture involves the rolling of the black plates and the dipping of them in tin or in terne mixture, terne mixture being an alloy of tin and lead, the proportion of tin varying from 20 to 25 per cent. The manufacture of the black plates is a rolling-mill operation and most of the coating is done by dipping departments of the mills that roll the plates. The dipping operation is, however, treated as a separate industry and the statistics for the tin and terne dipping departments of these mills in conjunction with the statistics for the few establishments which buy the black plates and coat them constitute the tin-plate and terneplate industry. In the general statistical tables the manufacture of the black plates are covered by the statistics for steel works and rolling mills. In the present report on tin and terne plate manufacture, the statistics for the black-plate mills are given, and the first section of this report presents the combined statistics for the black-plate mills and the tin and terne dipping departments or establishments; the second section gives statistics for the black-plate branch of the industry separately; and the third the statistics for the tin-plate and terneplate dipping business.

BLACK-PLATE AND DIPPING INDUSTRIES COMBINED.

Table 91 gives the most important figures relative to the tin-plate industry as a whole, including black-plate manufacture and tin-plate and terneplate dipping. Some rolling mills which roll black plates for tinning also produce other plates and sheets and to some extent other rolled products, the data for which are included in the statistics in this table.

Of the 35 establishments in the combined industry in 1914, 28 both rolled black plates and dipped them, 4 rolled black plates but had no dipping departments, while 3 were engaged in tin and terne dipping only.

The net value of all products in 1914 (excluding duplication on account of the black plates figuring both as products of the black-plate rolling mills and

as materials for the dipping establishments) was $93,275,370, of which amount the value of tin and terne plates represented 71 per cent. In 1909 the value of the tin and terne plate product formed 70.1 per cent of the net value of all products of these establishments, in 1904, 80.9 per cent, and in 1899, 75.7 per cent. The item "all other products" for the respective years consists chiefly of rolling-mill products other than black plates made in the rolling departments of the mills.

Table 91

	BLACK-PLATE AND DIPPING INDUSTRY, AS A WHOLE.				PER CENT OF INCREASE.[1]		
	1914	1909	1904	1899	1909–1914	1904–1909	1899–1904
Number of establishments	35	34	44	66			
Rolling black plates and dipping	28	27	27	35			
Rolling black plates but not dipping	4	3	8	9			
Doing tin-plate and terneplate dipping only	3	4	9	22			
Persons engaged	26,189	20,397	(2)	(2)			
Proprietors and firm members	8	7	(2)	(2)			
Salaried employees	1,928	1,434	861	726	34.4	66.6	18.6
Wage earners (average number)	24,253	18,956	17,164	14,826	27.9	10.4	15.8
Primary horsepower	145,128	80,764	(2)	(2)	79.7		
Capital	$82,996,949	$42,098,409	$31,984,487	$27,323,302	97.1	31.6	17.1
Salaries and wages	25,374,978	16,352,427	11,496,405	11,106,076	55.2	42.2	3.5
Salaries	2,697,956	1,627,814	936,682	818,015	65.7	73.8	14.5
Wages	22,677,022	14,724,613	10,559,723	10,288,061	54.0	39.4	2.6
Cost of materials	57,543,786	42,430,430	26,028,250	24,414,150	35.6	63.0	6.6
Value of products	93,275,370	65,378,580	42,690,880	41,322,053	42.7	53.1	3.3
Tin and terne plates	66,270,345	45,815,146	34,549,543	31,284,145	44.6	32.6	10.4
All other products	27,005,025	19,563,434	8,141,337	10,037,908	38.0	140.3	−18.9
Value added by manufacture (value of products less cost of materials)	35,731,584	22,948,150	16,662,630	16,907,903	55.7	37.7	−1.5

A minus sign (−) denotes decrease; percentages are omitted where base is less than 100. [2] Figures not available.

The value of products of the industry in 1914 was 42.7 per cent greater than in 1909. The value added by manufacture—that is, value of products less cost of materials—was $35,731,584 in 1914, an increase of 55.7 per cent as compared with 1909, and the number of wage earners 24,253, an increase of 27.9 per cent.

BLACK-PLATE MILLS.

Table 92 shows the general statistics of the black-plate mills, exclusive of the dipping departments, for the years 1914, 1909, 1904, and 1899. The 32 establishments rolling black plate include 4 equipped both for the manufacture of steel and for rolling the steel into plates, and 28 equipped for rolling only. The 4 establishments comprising the first group reported products in 1914 valued at $17,533,577, and the 28 of the second group, products valued at $46,733,943.

The value of the plates turned over to the dipping departments is an assigned value and may differ from the market value.

Table 92

	BLACK-PLATE MILLS, EXCLUDING DIPPING DEPARTMENTS.				PER CENT OF INCREASE.[1]		
	1914	1909	1904	1899	1909–1914	1904–1909	1899–1904
Number of establishments	32	30	35	44			
Persons engaged in the industry	20,456	14,551	(2)	(2)	40.6		
Proprietors and firm members	4	3	(2)	(2)			
Salaried employees	1,437	944	577	393	52.2	63.6	46.8
Wage earners (average number)	19,015	13,604	12,317	11,155	39.8	10.4	10.4
Primary horsepower	135,773	72,610	(2)	(2)	87.0		
Capital	$56,149,560	$31,103,596	$21,171,248	$20,673,255	80.5	46.9	2.4
Salaries and wages	20,691,861	12,417,633	8,803,781	8,924,336	66.6	41.0	−1.4
Salaries	1,939,286	1,007,894	627,128	526,692	92.4	60.7	19.1
Wages	18,752,575	11,409,739	8,176,653	8,398,144	64.4	39.5	−2.6
Cost of materials	38,972,337	29,522,147	17,640,773	18,276,566	32.0	67.4	−3.5
Value of products	64,267,520	46,390,086	30,395,757	30,020,608	38.5	52.6	1.2
Value added by manufacture (value of products less cost of materials)	25,295,183	16,867,939	12,754,984	11,744,042	50.0	32.2	8.6

[1] A minus sign (−) denotes decrease. [2] Figures not available.

The equipment of the black-plate departments of tin-plate and terneplate mills is shown in Table 93.

Table 93

	Census year.	BLACK-PLATE DEPARTMENTS OF TIN-PLATE AND TERNEPLATE MILLS.					Census year.	BLACK-PLATE DEPARTMENTS OF TIN-PLATE AND TERNEPLATE MILLS.			
		Number of establishments.	Hot-rolling mills.		Number of cold-rolling mills.			Number of establishments.	Hot-rolling mills.		Number of cold-rolling mills.
			Number.	Annual capacity on triple-turn (tons, 2,240 lbs.).					Number.	Annual capacity on triple-turn (tons, 2,240 lbs.).	
United States	1914	28	393	1,497,000	350	Pennsylvania—Continued	1904	15	196	462,000	164
	1909	24	335	1,042,000	268		[1] 1899	(2)	160	314,000	157
	1904	26	315	707,000	272	All other states	1914	16	205	803,000	170
	[1] 1899	(2)	332	641,000	294		1909	10	171	361,000	105
Pennsylvania	1914	12	188	694,000	180		1904	11	119	245,000	108
	1909	14	164	681,000	163		[1] 1899	(2)	172	327,000	137

[1] Includes idle establishments. [2] Figures not available.

TIN-PLATE AND TERNE PLATE DIPPING.

The section of the report which follows deals exclusively with the dipping of tin and terne plate. It covers the dipping departments of establishments which roll black plates and those which do dipping only.

Summary and comparison with earlier censuses.—Table 94 summarizes the statistics of establishments engaged in the tin and terne dipping industry for each census from 1899 to 1914 and gives percentages of increase.

Table 94

	TIN-PLATE AND TERNEPLATE DIPPING INDUSTRY.				PER CENT OF INCREASE.[1]		
	1914	1909	1904	1899	1909–1914	1904–1909	1899–1904
Number of establishments	31	31	36	57	.....	.....	.....
Persons engaged in the industry	5,733	5,846	5,132	4,019	–1.9	13.9	27.7
Proprietors and firm members	4	4	1	15	.....	.....	.....
Salaried employees	491	490	284	333	.....	72.5	–14.7
Wage earners (average number)	5,238	5,352	4,847	3,671	–2.1	10.4	32.0
Primary horsepower	9,355	8,154	8,990	3,515	14.7	–9.3	155.8
Capital	$26,847,389	$10,994,813	$10,813,239	$6,650,047	144.2	1.7	62.6
Salaries and wages	4,683,117	3,934,794	2,692,624	2,181,240	19.0	46.2	23.4
Salaries	758,670	619,920	309,554	291,323	22.4	100.3	6.3
Wages	3,924,447	3,314,874	2,383,070	1,889,917	18.4	39.1	26.1
Rent and taxes (including internal revenue)	141,787	54,020	[2] 30,882	[2] 34,271	159.6	76.9	–9.9
Cost of materials	57,906,561	41,889,434	31,375,714	26,728,150	38.2	33.5	17.4
Value of products	68,342,962	47,969,645	35,283,360	31,892,011	42.5	36.0	10.6
Value added by manufacture (value of products less cost of materials)	10,436,401	6,080,211	3,907,646	5,163,861	71.6	55.6	–24.3

[1] A minus sign(–) denotes decrease.

[2] Exclusiue of internal revenue.

The capital reported as invested in the industry increased from $10,994,813 in 1909 to $26,847,389 in 1914. The principal part of the capital, however, is that assigned to the dipping departments of rolling mills manufacturing tin plate and terneplate, and the basis on which this assignment was made may not have been the same for all estalishments for the two censuses.

The number of establishments in the industry decreased from 57 in 1899 to 31 in 1909; but remains the same for 1914 as that reported for 1909. The value of products for the five-year period 1909–1914 increased 42.5 per cent; although the number of wage earners decreased slightly.

The value added by manufacture represented 15.3 per cent of the value of products in 1914, and 12.7 per cent in 1909, 11.1 per cent in 1904, and 16.2 per cent in 1899.

The number of wage earners, 5,238 in 1914, constituted 21.6 per cent of the total number of wage earners employed in the black-plate rolling mills and the dipping establishments; 28.2 per cent in 1909; 28.2 per cent in 1904, and 24.8 per cent in 1899.

Persons engaged in the industry.—Table 95 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, and average number of wage earners, distributed by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

The average number of persons engaged in the tin-plate and terneplate dipping industry during 1914 was 5,733, as compared with 5,846 for 1909. The wage earners formed 91.4 per cent of the total number employed during 1914, as compared with 91.5 per cent for 1909.

Table 95

CLASS.	Census year.	PERSONS ENGAGED IN THE TIN-PLATE AND TERNEPLATE DIPPING INDUSTRY.				
		Total.	Male.	Female.	Per cent of total. Male.	Per cent of total. Female.
All classes	1914	5,733	5,039	694	87.9	12.1
	1909	5,846	5,275	571	90.2	9.8
Proprietors and officials	1914	92	92	.....	100.0	.....
	1909	98	98	.....	100.0	.....
Proprietors and firm members	1914	4	4	.....	100.0	.....
	1909	4	4	.....	100.0	.....
Salaried officers of corporations	1914	24	24	.....	100.0	.....
	1909	20	20	.....	100.0	.....
Superintendents and managers	1914	64	64	.....	100.0	.....
	1909	74	74	.....	100.0	.....
Clerks and other subordinate salaried employees.	1914	403	330	73	81.9	18.1
	1909	396	320	76	80.8	19.2
Wage earners (average number)	1914	5,238	4,617	621	88.1	11.9
	1909	5,352	4,857	495	90.8	9.2
16 years of age and over	1914	5,219	4,598	621	88.1	11.9
	1909	5,322	4,827	495	90.7	9.3
Under 16 years of age	1914	19	19	.....	100.0	.....
	1909	30	30	.....	100.0	.....

The number of women employed as wage earners is proportionately the largest of any of the iron and steel industries, and the proportion increased from 9.2 per cent in 1909 to 11.9 per cent in 1914. The decrease in number of wage earners was confined to the males, the females showing a material increase.

Table 96 shows the percentages of increase from 1909 to 1914 and the per cent distribution at the two censuses.

The number of women employed as wage earners increased 25.5 per cent during the five-year period, while the number of males under 16 years of age decreased 36.7 per cent.

The distribution of the wage earners, by sex and age groups, shows no marked change in the proportion each group is of the total number.

Table 96 — PERSONS ENGAGED IN THE TIN-PLATE AND TERNEPLATE DIPPING INDUSTRY.

CLASS.	Per cent of increase,[1] 1909–1914.			Per cent distribution.					
				Total.		Male.		Female.	
	Total.	Male.	Female.	1914	1909	1914	1909	1914	1909
All classes	−1.9	−4.5	21.9	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials				1.6	1.7	1.8	1.9		
Proprietors and firm members				0.1	0.1	0.1	0.1		
Salaried officers of corporations				0.4	0.3	0.5	0.4		
Superintendents and managers				1.1	1.3	1.3	1.4		
Clerks and other subordinate salaried employees	1.8	3.1	−3.0	7.0	6.8	6.6	6.1	10.5	13.3
Wage earners (average number)	−2.1	−4.9	25.5	91.4	91.5	91.6	92.1	89.5	86.7
16 years of age and over	−1.9	−4.7	25.5	91.0	91.2	91.2	91.5	89.5	86.7
Under 16 years of age	−36.7	−36.7		0.3	0.5	0.4	0.6		

[1] A minus sign (−) denotes decrease; percentages are omitted when base is less than 100.

Wage earners employed, by months.—The following table gives for the industry the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

Table 97 — WAGE EARNERS IN THE TIN-PLATE AND TERNEPLATE DIPPING INDUSTRY.

MONTH.	Number.[1]			Per cent of maximum.		
	1914	1909	1904	1914	1909	1904
January	5,222	4,924	4,202	91.6	85.3	78.1
February	5,277	5,187	4,534	92.5	89.8	84.3
March	5,286	5,215	4,889	92.7	90.3	88.0
April	5,702	5,508	4,909	100.0	95.4	89.3
May	5,591	5,321	5,240	98.1	92.3	95.3
June	5,580	5,775	5,490	97.9	100.0	100.0
July	5,448	4,771	5,378	95.5	82.6	97.8
August	4,943	5,079	5,062	86.7	87.9	92.1
September	5,427	5,215	4,444	95.2	90.3	80.8
October	5,526	5,494	4,492	96.9	95.1	81.7
November	4,300	5,092	4,170	75.4	98.6	75.8
December	4,154	5,086	5,155	72.9	98.5	93.7

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904, the average number employed during the month.

The year 1914 shows the greatest fluctuation in the number of wage earners employed. The average monthly employment of wage earners in 1914 was 5,238; in 1909, 5,352; and in 1904, 4,847.

Prevailing hours of labor.—In Table 98 the average number of wage earners reported for 1914 and 1909, for the industry, has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment is classified as a total even though a few employees worked a greater or less number of hours.

The figures emphasize the tendency toward a shortening of the hours of employment. In 1909, 1,782, or one-third of the total average number of wage earners were employed in establishments where the prevailing hours of labor were more than 54 per week, while less than one-tenth were so employed in 1914. In 1914, 41.8 per cent of the total number were employed in establishments where the prevailing hours of labor were 48 and under, whereas in 1909, but 13.6 per cent were reported in that class. The average number of hours of labor per week, figuring the lower group at 48, "between 48 and 54" at 51, and "between 54 and 60" at 57, was 51.7 hours in 1914 and 54.3 in 1909, an average decrease for the five-year period of 2.6 hours per week.

Table 98 — AVERAGE NUMBER OF WAGE EARNERS IN THE TIN-PLATE AND TERNEPLATE DIPPING INDUSTRY.

STATE.	Census year.	Total.	In establishments where the prevailing hours of labor per week were—				
			48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.
United States	1914	5,238	2,190	7	2,057	378	6
	1909	5,352	729	.....	2,841	1,503	270
Ohio	1914	953	498	.....	361	88	6
	1909	676	.....	.....	461	137	78
Pennsylvania	1914	2,368	639	7	1,722	.....	.....
	1909	2,346	206	.....	1,539	400	201
West Virginia	1914	1,475	857	.....	328	290	.....
	1909	1,335	523	.....	456	356	.....

Character of ownership.—Of the 31 establishments in this industry, 30 were owned by corporations and 1 by a firm.

Size of establishments.—Table 99 shows, for 1914, 1909, and 1904, the number of establishments grouped according to value of products and for each group the value of products and per cent distribution.

In 1914 there were 23 establishments which reported products valued at $1,000,000 and over each, as compared with 18 in 1909, and 12 in 1904. The average value of products per establishment increased from $980,000 in 1904 to $1,547,000 in 1909 and to $2,205,000 in 1914.

Table 99

	Census year.	Total.	TIN-PLATE AND TERNEPLATE DIPPING INDUSTRY—VALUE OF PRODUCT PER ESTABLISHMENT.		
			Less than $100,000.[1]	$100,000 to $1,000,000.	$1,000,000 and over.
Number of establishments	1914	31	3	5	23
	1909	31	3	10	18
	1904	36	3	21	12
Value of products	1914	$68,342,962	$186,440	$2,452,110	$65,704,412
	1909	$47,969,645	$175,689	$5,623,373	$42,170,583
	1904	$35,283,360	$219,398	$9,940,551	$25,123,411
Per cent distribution:					
Number of establishments	1914	100.0	9.7	16.1	74.2
	1909	100.0	9.7	32.3	58.1
	1904	100.0	8.3	58.3	33.3
Value of products	1914	100.0	0.3	3.6	96.1
	1909	100.0	0.4	11.7	87.9
	1904	100.0	0.6	28.2	71.2

[1] From $20,000 to $100,000.

Table 100 gives, for 1914 and 1909, the number of establishments and the number and per cent distribution of wage earners, grouped according to the average number of wage earners employed.

The largest number of establishments and the largest number of wage earners are in the group of "101 to 250 wage earners," this group constituting 43.9 per cent of the total number of wage earners in 1914 and 38 per cent in 1909. The average number of wage earners per establishment was 135 in 1904, 173 in 1909, and 169 in 1914.

Table 100

CLASS.	TIN-PLATE AND TERNEPLATE DIPPING INDUSTRY.					
	Number of establishments.		Wage earners (average number).		Per cent distribution.	
	1914	1909	1914	1909	1914	1909
Total	31	31	5,238	5,352	100.0	100.0
Establishments employing—						
6 to 20 wage earners	3	4	23	47	0.4	0.9
21 to 50 wage earners	1	2	45	88	0.9	1.6
51 to 100 wage earners	6	6	490	469	9.4	8.8
101 to 250 wage earners	14	12	2,301	2,035	43.9	38.0
251 to 500 wage earners	6	5	1,860	1,604	35.5	30.0
Over 500 wage earners	1	2	519	1,109	9.9	20.7

Engines and power.—Table 101 shows, for 1914, 1909, and 1904, for the industry, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

Table 101

POWER.	TIN-PLATE AND TERNEPLATE DIPPING INDUSTRY.								
	Number of engines or motors.			Horsepower.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	163	32	43	9,355	8,154	8,990	100.0	100.0	100.0
Owned	30	29	40	7,599	8,137	8,928	81.2	99.8	99.3
Steam engines and turbines	27	27	39	7,116	7,937	8,878	76.1	97.3	98.8
Internal-combustion engines	3	2	1	483	200	50	5.2	2.5	0.6
Rented	133	3	3	1,756	17	62	18.8	0.2	0.7
Electric	133	3	3	1,756	17	12	18.8	0.2	0.1
Other						50			0.6
Electric	292	102	21	3,948	1,147	253	100.0	100.0	100.0
Rented	133	3	3	1,756	17	12	44.5	1.5	4.7
Generated by establishments reporting	159	99	18	2,192	1,130	241	55.5	98.5	95.3

The majority of the establishments are departments of rolling mills, and the quantity of power utilized in the dipping establishments can not in all cases be accurately segregated. In 1914, 29 of the 31 establishments reported power; in 1909, 15; and in 1904, 20. A marked feature is the increase in electric power installations. In 1914 over two-fifths of the utilized power was electric, either rented or generated.

SPECIAL DATA AS TO MATERIALS, PRODUCTS, AND EQUIPMENT.

Comparative statistics relating to the quantity and cost of the materials used in the tin-plate and terneplate industry and the quantity and value of the products are given in Table 102 for the censuses 1899 to 1914, inclusive. The comparative statistics with respect to products are also given for the leading state, Pennsylvania.

Table 102 TIN-PLATE AND TERNEPLATE DIPPING INDUSTRY.

	1914[1]	1909[2]	1904	1899
UNITED STATES.				
Materials, total cost	$57,906,561	$41,889,434	$31,375,714	$26,728,150
Black plates or sheets[3]—				
Pounds	2,107,787,589	1,321,071,691	1,019,608,657	827,915,599
Steel	2,101,578,620	1,312,345,153	1,018,575,390	(4)
Iron	[5] 6,208,969	8,726,538	1,033,267	(4)
Cost	$39,803,655	$28,981,151	$22,992,006	$20,668,848
Steel	39,597,122	28,884,237	22,961,415	(4)
Iron	206,533	96,914	30,591	(4)
Produced by the establishment reporting—				
Pounds	2,084,536,669	1,291,048,109	943,708,583	(4)
Assigned cost	$39,335,112	$28,245,234	$21,154,388	(4)
Purchased—				
Pounds	23,250,920	30,023,582	75,810,074	(4)
Cost	$468,543	$735,917	$1,837,618	(4)
Coating metals:				
Pig tin—				
Pounds	36,542,881	28,586,267		
Cost	$14,167,237	$8,490,794		
Pig lead—				
Pounds	2,269,160	2,708,496	32,445,104	27,154,258
Cost	$94,024	$117,656	$7,075,722	$4,927,090
Terne mixture (purchased)—				
Pounds	6,618,211	9,632,996		
Cost	$783,546	$1,061,587		
Total tin and lead, including contents of terne mixture, purchased, pounds	45,430,252	40,927,759	32,445,104	27,154,258
Tin	38,049,636	31,077,651	24,243,851	20,282,778
Lead	7,380,616	9,850,108	8,201,253	6,871,480
Fuel and rent of power	$309,924	$289,675	$159,786	$93,456
All other materials	$2,748,175	$2,948,571	$1,148,200	$1,038,756
Products, total value	$68,342,962	$47,969,645	$35,283,360	$31,892,011
Tin plate and terneplate:				
Pounds	[6]2,053,966,144	1,315,313,132	1,026,384,851	849,004,022
Value	$66,270,345	$45,815,146	$34,549,543	$31,284,145
Tin plate—				
Pounds	,901,331,895 1	,123,968,875	867,526,985	707,718,239
Value	$60,258,024	$38,259,885	$28,429,971	$25,553,021
Coke plate—				
Pounds	1,855,892,526	(4)	(4)	(4)
Value	$58,450,853	(4)	(4)	(4)
Charcoal plate—				
Pounds	45,439,369	(4)	(4)	(4)
Value	$1,807,171	(4)	(4)	(4)
Terneplate—				
Pounds	152,634,249	191,344,257	158,857,866	141,285,783
Value	$6,012,321	$7,555,261	$6,119,572	$5,731,124
All other products, including plates redipped, stamped ware, dross, scruff, scrap, etc	$2,072,617	[7] $2,154,499	[7] $733,817	[7] $607,866
PENNSYLVANIA.				
Products, total value	$36,795,990	$25,234,066	$19,341,961	$12,530,991
Tin plate and terneplate:				
Pounds	1,152,867,757	695,377,287	583,599,140	334,008,980
Value	$35,567,823	$23,750,750	$18,928,397	$12,401,252
Tin plate—				
Pounds	1,145,846,518	648,502,133	524,905,922	256,879,332
Value	$35,253,572	$21,687,492	$16,547,120	$9,137,433
Terneplate—				
Pounds	7,021,239	46,875,154	58,693,218	77,129,648
Value	$314,251	$2,063,258	$2,381,277	$3,263,769
All other products	$1,228,167	$1,483,316	$413,564	$129,739
ALL OTHER STATES.				
Products, total value	$31,546,972	$22,735,579	$15,941,399	$19,361,020
Tin plate and terneplate:				
Pounds	901,098,387	619,935,845	442,785,711	514,995,042
Value	$30,702,522	$22,064,396	$15,621,146	$18,882,893
Tin plate—				
Pounds	755,485,377	475,466,742	342,621,063	450,838,907
Value	$25,004,452	$16,572,393	$11,882,851	$16,415,538
Terneplate—				
Pounds	145,613,010	144,469,103	100,164,648	64,156,135
Value	$5,698,070	$5,492,003	$3,738,295	$2,467,355
All other products	$844,450	$671,183	$320,253	$478,127

[1] In addition, 1 establishment engaged primarily in another branch of manufacture made some terneplate.
[2] In addition, 3 establishments engaged primarily in other lines of manufacture produced 8,389,200 pounds of tin plate and terneplate, valued at $398,143.
[3] No black plates of foreign manufacture used in 1914 and 1909; in 1904, 83,900 pounds, costing $3,769; in 1899, 2,358,607 pounds, costing $78,282.
[4] Figures not available.
[5] Comprises 5,347,540 pounds of charcoal iron and 861,429 pounds of other iron.
[6] Includes 6,144,890 pounds of iron plate, valued at $358,828; balance steel.
[7] Includes value of other sheet-iron or sheet steel, tinned or terneplated, taggers tin, etc., for 1909, 19,400,934 pounds, value, $520,465; 1904, 6,555,855 pounds, value, $217,476; 1899, 1,000,473 pounds, value, $86,492.

Materials.—The black plates were all of domestic manufacture in 1914 and 1909, whereas in 1899 2,358,607 pounds of foreign plates were used and in 1904 83,900 pounds. In 1914, 98.9 per cent of the black plates were rolled by the establishments which did the dipping, only 1.1 per cent being purchased, as compared with 2.3 per cent purchased in 1909 and 7.4 per cent in 1904. Only 6,208,969 pounds of iron plates, of which 5,347,540 pounds were charcoal iron, were used in 1914. In 1909 the consumption of iron plates was 8,726,583 pounds and in 1904, 1,033,267 pounds.

The cost of the black plates represented 68.7 per cent of the cost of all materials in 1914, and the cost of coating metals 26 per cent; the cost of all other materials constituting 5.3 per cent of the total. In 1909 the respective proportions were black plates, 69.2 per cent; coating metals, 23.1 per cent; and all other materials, 7.7 per cent; in 1904, 73.3 per cent, 22.6 per cent, and 4.1 per cent, respectively; and in 1899, 77.3 per cent, 18.4 per cent, and 4.3 per cent. The ratio of the expense for coating metal has increased with each census, and that for black plates has decreased. This change is due to the increase in the cost of tin. The chief materials included under "all other materials" are palm oil, sulphuric acid, tinning flux, bran and pink meal, boxes, which constitute a large item of expense, and coated plates purchased for redipping.

Products.—The production of tin plate and terneplate in 1914 was, in round numbers, 2,053,966,000 pounds, valued at $66,270,345, as compared with 1,315,313,000 pounds, valued at $45,815,146 in 1909, an increase of 56.2 per cent in quantity and of 44.6 per cent in value for this five-year period.

The ratio of increase for the decade 1904–1914 was 100.1 per cent as to quantity and 91.8 per cent as to value; and for the decade 1899–1909, 54.9 per cent as to quantity and 46.5 per cent as to value; these decades overlapping. The output in 1914 was nearly 739,000,000 pounds in excess of that of 1909.

Tin plate formed 92.6 per cent of tin-plate and terneplate products in 1914, 85.5 per cent in 1909 and 1904, and 83.4 per cent in 1899.

The state of Pennsylvania produced 60.3 per cent of the tin-plate products of the country in 1914, 57.7 in 1909, and 60.5 in 1904; West Virginia, 16 per cent in 1914, 16.8 per cent in 1909; and Ohio 15.9 per cent in 1914 and 14 per cent in 1909. Of the total terneplate product West Virginia produced 82.7 per cent in 1914 and 35.8 in 1909; Ohio, 16.7 per cent in 1914 and 28.8 in 1909; and Pennsylvania, 5.1 per cent in 1914 and 24.5 in 1909.

Production, imports, and exports.—Prior to 1891 practically the entire consumption of tin plate and terneplate was of foreign origin. By 1899 the domestic production was over six times as great as the im-

ports and by 1904 there was considerable exportation of the domestic product. Table 103 gives the domestic production in each census year, 1899 to 1914, together with the exports and imports, and shows the quantity retained in this country and available for consumption.

Table 103

	TIN PLATE AND TERNEPLATE, POUNDS.					PER CENT OF INCREASE.[1]			
	1914	1909	1904	1899	1889	1909–1914	1904–1909	1899–1904	1889–1899
Retained for consumption	1,954,948,295	1,462,387,579	1,173,329,667	981,297,455	740,155,040	33.7	24.6	19.6	32.6
Of domestic origin	1,920,576,896	1,322,209,898	1,015,249,355	849,705,880	[2]	45.3	30.2	19.5	.....
Of foreign origin	34,371,399	140,177,681	158,080,312	131,591,575	740,155,040	−75.5	−11.3	20.1	−82.2
Per cent of total—									
Domestic	98.2	90.4	86.5	86.6	.....	.....	.....	.....	.....
Foreign	1.8	9.6	13.5	13.4	100.0	.....	.....	.....	.....
Domestic production	2,053,966,144	1,343,103,266	1,032,940,706	850,004,495	[2]	52.9	30.0	21.5	.....
Exports of domestic	133,389,248	20,893,368	17,691,351	298,615	.....	538.0	18.1	.....	.....
Retained for consumption	1,920,576,896	1,322,209,898	1,015,249,355	849,705,880	.....	45.3	30.2	19.5	.....
Imports	34,521,171	140,208,441	158,260,762	131,970,441	742,135,787	−75.4	−11.4	19.9	−82.2
Reexports	149,772	30,760	180,450	378,866	1,979,747	387.0	−83.0	−52.4	−80.9
Retained for consumption	34,371,399	140,177,681	158,080,312	131,591,575	740,155,040	−75.5	−11.3	21.1	−82.2

[1] A minus sign (−) denotes decrease.

[2] Figures not available.

Equipment, dipping sets.—Table 104 shows the dipping equipment and daily capacity of tin-plate and terneplate establishments for the several years. It includes the equipment of the plants that made coated plate as an intermediate or secondary product.

Table 104

	TIN-PLATE AND TERNEPLATE DIPPING INDUSTRY. EQUIPMENT—DIPPING SETS.					TIN-PLATE AND TERNEPLATE DIPPING INDUSTRY. EQUIPMENT—DIPPING SETS.			
	1914	1909	1904	1899		1914	1909	1904	1899
UNITED STATES.					UNITED STATES—continued.				
Number of dipping sets at end of year[1]	693	573	619	583	Number of establishments operating on:				
Usually employed on tin plate	615	455	499	[2]	Single turn	6	5	[2]	[2]
Usually employed on terneplate	78	118	120	[2]	Double turn	5	10	.....	.....
Daily capacity single turn, pounds[1]	3,868,000	2,840,000	3,454,000	2,733,000	Triple turn	21	16	.....	.....
Tin plate	3,454,000	2,076,000	2,887,000	2,004,000	Daily capacity as operated, whether on single, double, or triple turn, pounds	10,726,000	7,016,000	[2]	[2]
Terneplate	414,000	764,000	567,000	729,000					

[1] Includes that of subsidiary establishments.

[2] Figures not available.

On the basis of 300 working days, the output of coated plate was equal to approximately 88 per cent of the capacity of the establishments on double turn in 1914, and to 77 per cent in 1909.

Materials, products, and equipment, by states.—The detail statistics of materials, products, and equipment, by states, in 1914, are given in Table 105.

Table 105

	TIN PLATE AND TERNEPLATE—DETAIL STATISTICS OF NUMBER OF ESTABLISHMENTS, MATERIALS, PRODUCTS, AND EQUIPMENT, BY STATES: 1914.				
	United States.	Ohio.	Pennsylvania.	West Virginia.	All other states.[1]
Number of establishments	31	7	13	8	3
MATERIALS USED.					
Total cost	$57,906,561	$9,442,743	$31,933,881	$11,866,637	$4,663,300
Black plates or sheets:[2]					
Pounds	[3] 2,107,787,589	349,217,545	1,180,120,546	420,367,239	158,082,259
Produced by establishment reporting	2,084,536,669	349,217,545	1,180,120,546	403,049,264	152,149,314
Purchased	23,250,920	.....	.....	17,317,975	5,932,945
Cost	$39,803,655	$6,517,529	$22,225,047	$7,854,440	$3,206,639
Coating metals:					
Pounds	45,430,252	7,418,985	22,006,240	12,191,938	3,813,089
Cost	$15,044,807	$2,487,865	$8,352,778	$2,962,978	$1,241,186
Pig tin—					
Pounds	36,542,881	6,136,884	21,428,916	5,831,235	3,145,846
Cost	$14,167,237	$2,365,900	$8,291,664	$2,295,177	$1,214,496
Pig lead—					
Pounds	2,269,160	469,630	24,301	1,107,986	667,243
Cost	$94,024	$20,069	$1,069	$46,196	$26,690

[1] All other states embrace: Illinois, 1 establishment; Indiana, 1; and Maryland, 1.

[2] All domestic.

[3] Includes 2,101,578,620 pounds of steel, 5,347,540 pounds of charcoal iron, and 861,429 pounds of other iron.

Table 105—Continued.

TIN PLATE AND TERNEPLATE—DETAIL STATISTICS OF NUMBER OF ESTABLISHMENTS, MATERIALS, PRODUCTS, AND EQUIPMENT, BY STATES: 1914.

	United States.	Ohio.	Pennsylvania.	West Virginia.	All other states.[1]
MATERIALS USED—continued.					
Coating metals—Continued.					
Terne mixture—					
Pounds	6,618,211	812,471	553,023	5,252,717	.....
Cost	$783,546	$101,896	$60,045	$621,605	.....
Total consumption of tin and lead, including contents of terne mixture purchased, pounds:					
Tin	38,049,636	6,331,877	21,557,100	7,014,813	3,145,846
Lead	7,380,616	1,087,108	449,140	5,177,125	667,243
All other materials[2]	$3,058,099	$437,349	$1,356,056	$1,049,219	$215,475
PRODUCTS.					
Total value	$68,342,962	$10,826,098	$36,795,990	$15,130,551	$5,590,323
Tin plate and terneplate:					
Pounds	2,053,966,144	325,180,210	1,152,867,757	417,861,666	158,056,511
Value	$66,270,345	$10,389,051	$35,567,823	$14,886,043	$5,427,428
Tin plate—					
Pounds	1,901,331,895	302,157,513	1,145,846,518	303,561,325	149,766,539
Value	$60,258,024	$9,559,255	$35,253,572	$10,532,162	$4,913,035
Coke plate—					
Pounds	1,855,892,526	297,342,761	1,130,188,763	280,924,394	147,436,608
Value	$58,450,853	$9,385,009	$34,660,849	$9,600,190	$4,804,805
Charcoal and iron plate—					
Pounds	45,439,369	4,814,752	15,657,755	22,636,931	2,329,931
Value	$1,807,171	$174,246	$592,723	$931,972	$108,230
Terneplate—					
Pounds	152,634,249	23,022,697	(3)	114,300,341	(3)
Steel	148,319,359	(3)	(3)	(3)	(3)
Iron	4,314,890	(3)	(3)	(3)	.....
Value	$6,012,321	$829,796	(3)	$4,353,881	(3)
All other products[4]	$2,072,617	$437,047	$1,228,167	$244,508	$162,895
EQUIPMENT.[5]					
Tin-plate or terneplate dipping sets at end of year	693	134	314	152	93
Number usually employed on tin plate	615	113	305	111	86
Number usually employed on terneplate	78	21	9	41	7
Daily capacity, single turn, pounds	3,868,000	687,000	1,882,000	808,000	491,000
Tin-plate department	3,454,000	631,000	1,827,000	553,000	443,000
Terneplate department	414,000	56,000	55,000	255,000	48,000
Number of establishments operating on:					
Single turn	6	1	2	2	1
Double turn	5	1	2	2	.....
Triple turn	21	5	9	5	2
Daily capacity, as operated, whether on single, double, or triple turn, pounds	10,726,000	1,938,000	5,435,000	2,069,000	1,284,000
Hot black-plate mills in rolling-mill department:					
Number	393	74	188	65	66
Annual capacity on triple turn, tons	1,497,000	273,000	695,000	239,000	290,000
Cold mills in black-plate department	350	70	180	61	39

[1] All other states embrace: Illinois, 1 establishment; Indiana, 1; and Maryland, 1.
[2] Inclusive of plates for redipping.
[3] Included in total, but amount not shown, to avoid disclosure of individual operations.
[4] Includes stamped ware, valued at $55,667; redipped plates and tin dross, scruff, scrap, etc.
[5] Includes the equipment of one establishment manufacturing terneplate as a subsidiary product.

DETAIL STATE TABLES.

The principal facts derived from the census inquiry concerning tin-plate and terneplate dipping are presented in two general tables. Table 106 gives the more important general statistics of the industry in the United States for 1914, 1909, and 1904, and by states for 1914 and 1909. Table 107 presents for 1914, by states, the more detailed statistics of the industry.

TABLE 106.—TIN PLATE AND TERNEPLATE—COMPARATIVE SUMMARY, BY STATES, FOR 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	31	5,238	9,355	$3,924	$57,907	$68,343
	1909	31	5,352	8,154	3,315	41,889	47,970
	1904	36	4,847	8,990	2,383	31,376	35,283
Ohio	1914	7	953	1,330	659	9,443	10,826
	1909	4	676	1,849	449	7,155	7,889
Pennsylvania	1914	13	2,368	4,259	$1,785	$31,934	$36,796
	1909	17	2,346	1,565	1,339	22,898	25,234
	1904	19	2,421	5,805	1,207	17,590	19,342
West Virginia	1914	8	1,475	1,421	1,182	11,867	15,131
	1909	6	1,335	890	847	7,367	9,258
All other states	1914	3	442	2,345	298	4,663	5,590
	1909	4	995	3,850	680	4,469	5,589

TABLE 107.—TIN PLATE AND TERNEPLATE—DETAIL STATEMENT, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.	EXPENSES.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male.	Female.		Officials.	Clerks, etc.
								Maximum month.	Minimum month.								
United States...	31	5,733	4	88	330	73	5,238	Ap 5,702	De 4,154	5,818	5,107	690	21	.....	$26,847,389	$327,489	$431,181
Ohio	7	1,030	.....	19	48	10	953	Oc 1,054	De 689	1,026	900	126	.....	.....	3,201,598	39,969	30,686
Pennsylvania	13	2,600	.....	44	148	40	2,368	Mh 2,595	De 1,997	2,650	2,277	356	17	.....	15,179,343	178,087	216,038
West Virginia	8	1,612	.....	20	102	15	1,475	Se 1,637	No 1,121	1,540	1,393	147	.....	.....	5,199,091	82,432	142,855
All other states [1]	3	491	4	5	32	8	442	.....	.....	602	537	61	4	.....	3,267,357	27,001	41,602

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					Electric horsepower generated in establishments reporting.
	Salaries and wages—Continued.	For contract work.	Rent and taxes.		For materials.				Primary horsepower.					
	Wage earners.		Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.[2]	Internal-combustion engines.[2]	Water wheels and motors.[2]	Electric (rented).	
United States...	$3,924,447	.....	$900	$140,887	$57,596,637	$309,924	$68,342,962	$10,436,401	9,355	7,116	483	.....	1,756	2,192
Ohio	658,563	.....	.....	22,439	9,386,144	56,599	10,826,098	1,383,355	1,330	607	333	.....	390	395
Pennsylvania	1,784,929	.....	900	81,702	31,796,440	137,441	36,795,990	4,862,109	4,259	3,133	.....	.....	1,126	490
West Virginia	1,181,983	.....	.....	22,166	11,818,650	47,987	15,130,551	3,263,914	1,421	1,271	150	.....	.....	866
All other states [1]	298,972	.....	.....	14,580	4,595,403	67,897	5,590,323	927,023	2,345	2,105	.....	.....	240	441

[1] All other states embrace: Illinois, 1 establishment; Indiana, 1; Maryland, 1.

[2] Owned power only.

CAST-IRON PIPE.

SUMMARY AND ANALYSIS.

Scope of the industry.—Establishments engaged primarily in the manufacture of cast-iron pipe were first grouped as an industry at the census of 1909. Prior thereto they were included with those for foundry and machine-shop products, which comprised iron foundries, boiler shops, and machine shops in general. It is to a large degree a special line of manufacture. The products embrace cast-iron gas pipe, water pipe, culvert pipe, and soil and plumbers' pipe, and cast-iron fittings, comprising junctions, elbows, tees, etc.

Comparative summary for the United States.—Table 1 summarizes the statistics of establishments engaged in the manufacture of cast-iron pipe for 1914 and 1909, and gives percentages of increase.

Table 1

	NUMBER OR AMOUNT.		Per cent of increase,[1] 1909–1914.
	1914	1909	
Number of establishments	59	52	.....
Persons engaged	13,290	12,884	3.2
Proprietors and firm members	8	7	.....
Salaried employees	725	649	11.7
Wage earners (average number)	12,557	12,228	2.7
Primary horsepower	25,864	18,737	38.0
Capital	$28,981,070	$23,110,318	16.7
Salaries and wages	8,112,385	7,427,175	9.2
Salaries	1,036,409	924,837	12.1
Wages	7,075,976	6,502,338	8.8
Paid for contract work	2,672	8,210	−67.5
Rent and taxes (including internal revenue)	167,226	120,900	38.3
Cost of materials	16,930,141	18,884,342	−10.3
Value of products	26,659,365	29,153,723	−8.6
Value added by manufacture (value of products less cost of materials)	9,729,224	10,269,381	−5.3

[1] A minus sign (−) denotes decrease; percentages are omitted where base is less than 100.

The table shows increases in all the items for the five-year period except amount paid for contract work, cost of materials, value of product, and value added by manufacture. The amount paid for contract work depends upon the methods followed and the decrease is no indication of a decrease in the magnitude of operations. The decreases in the other items are due to the depression in the cost of pig iron in 1914. In 1909 the average price per long ton of pig iron in the United States was $16.25, and in 1914, $13.42, resulting in a marked decrease in cost of materials, with a less proportionate decrease in value of products and in value added.

Summary, by states.—Table 2 summarizes the more important statistics of the industry, by states, the states being arranged according to the value of products reported for 1914. Virginia and Tennessee ranked higher than New York—fifth and sixth, respectively—but data for these states can not be shown without disclosing the operations of individual establishments.

More than one-half of the cast-iron pipe manufactured in the United States in 1914 was made in New Jersey and Alabama. These states reported 49.2 per cent of the establishments, 56.6 per cent of the wage earners, and 52.9 per cent of the value of the products, the former state producing 27.6 per cent, and the latter 25.3 per cent of all cast-iron pipe manufactured in the United States.

Table 2

STATE.	Number of establishments.	WAGE EARNERS.					VALUE OF PRODUCTS.					VALUE ADDED BY MANUFACTURE.				
		Average number.	Per cent distribution.	Rank. 1914	Rank. 1909	Per cent of increase,[1] 1909–1914.	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	Per cent of increase,[1] 1909–1914.	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	Per cent of increase,[1] 1909–1914.
United States	59	12,557	100.0	.....	.....	2.7	$26,659,365	100.0	.....	.....	−8.6	$9,729,224	100.0	.....	.....	−5.3
New Jersey	9	3,421	27.2	2	1	4.5	7,352,798	27.6	1	1	−8.1	2,569,097	26.4	2	1	−3.0
Alabama	20	3,696	29.4	1	2	28.4	6,754,103	25.3	2	2	10.8	2,846,846	29.3	1	2	19.1
Pennsylvania	7	1,835	14.6	3	4	27.9	4,550,718	17.1	3	4	28.8	1,255,354	12.9	4	4	13.0
Ohio	8	1,417	11.3	4	3	−18.1	3,355,043	12.6	4	3	−26.7	1,292,590	13.3	3	3	−30.2
New York	3	213	1.7	7	7	−54.1	370,704	1.4	7	7	−62.6	184,313	1.9	7	7	−39.3
All other states	12	1,975	15.7	.....	.....	−19.3	4,275,999	16.0	.....	.....	−28.2	1,581,024	16.2	.....	.....	−19.5

[1] Percentages are based on figures in Table 12; a minus sign (−) denotes decrease.

During the five-year period 1909-1914, of the states for which comparable data are given in the table, only two states show a relative gain in value of products—Pennsylvania, 28.8 per cent, and Alabama, 10.8 per cent. New Jersey, while still leading in production, shows a decrease. Measured by the average number of wage earners, however, the greatest increase—28.4 per cent—appears for Alabama, and the next greatest for Pennsylvania—27.9 per cent. With the exception of Pennsylvania and Ohio, the states held the same rank in value of products in 1914 as in 1909. Pennsylvania ranked third in 1914, having exchanged places with Ohio.

Persons engaged in the industry.—Table 3 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, the average number of wage earners being distributed also by age. The sex and age classification of the average number of wage

earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Table 3

CLASS.	Census year.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Male.	Female.	Per cent of total. Male.	Female.
All classes	1914	13,290	13,190	100	99.2	0.8
	1909	12,383	12,831	52	99.6	0.4
Proprietors and officials	1914	188	187	1	99.5	0.5
	1909	192	192	.....	.....	.....
Proprietors and firm members	1914	8	8	.....	100.0	.....
	1909	7	7	.....	100.0	.....
Salaried officers of corporations	1914	78	78	.....	100.0	.....
	1909	61	61	.....	100.0	.....
Superintendents and managers	1914	102	101	1	99.0	1.0
	1909	124	124	.....	100.0	.....
Clerks and other subordinate salaried employees.	1914	545	459	86	84.2	15.8
	1909	464	424	40	91.4	8.6
Wage earners (average number)	1914	12,557	12,544	13	99.9	0.1
	1909	12,227	12,215	12	99.9	0.1
16 years of age and over	1914	12,507	12,494	13	99.9	0.1
	1909	12,154	12,142	12	99.9	0.1
Under 16 years of age	1914	50	50	.....	100.0	.....
	1909	73	73	.....	100.0	.....

The average number of persons engaged in the industry in 1914 was 13,290, of whom 12,557, or 94.5 per cent were wage earners; 188, or 1.4 per cent, proprietors or officials; and 545, or 4.1 per cent, clerks and other subordinate salaried employees. Of the total number of persons engaged in the industry, 99.2 per cent were males. Less than 1 per cent of the total number were under 16 years of age.

Wage earners employed, by months.—The following table gives, for the industry, the total number of wage earners employed on the 15th of each month, or the nearest representative day, for the years 1914 and 1909, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

Table 4

MONTH.	WAGE EARNERS IN THE INDUSTRY. Number. 1914	1909	Per cent of maximum. 1914	1909
January	11,816	11,113	88.0	84.4
February	12,572	11,147	93.6	84.6
March	13,193	11,502	98.3	87.3
April	12,701	11,743	94.6	89.1
May	12,613	11,778	93.9	89.4
June	12,849	12,310	95.7	93.4
July	13,221	12,301	98.5	93.4
August	13,427	12,722	100.0	96.6
September	13,211	12,958	98.4	98.4
October	12,555	12,997	93.5	98.7
November	11,336	13,174	84.4	100.0
December	11,190	13,000	83.3	98.7

In 1914 the maximum number employed was 13,427 in August, but in 1909, November, with 13,174, was the month of maximum employment. The minimum number was employed in December in 1914 and in January in 1909. The degree of fluctuation in employment was substantially the same in each year, the percentage, which the minimum number employed represented of the maximum, being 84.4 per cent in 1909 and 83.3 in 1914.

Table 5 gives the total average number of wage earners employed during 1914, together with the total number employed on the 15th of each month, or the nearest representative day, for each state in which the average number of wage earners was 500 or more in 1914.

Table 5

WAGE EARNERS: 1914.
[Month of maximum employment for each state is indicated by **boldface** figures and that of minimum by *italic* figures.]

STATE.	Average number employed during year.	Number employed on 15th day of the month or nearest representative day. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Per cent minimum is of maximum.
United States	12,557	11,816	12,572	13,193	12,701	12,613	12,849	13,221	**13,427**	13,211	12,555	11,336	*11,190*	83.3
Alabama	3,696	*3,491*	3,740	3,947	3,545	3,553	3,680	3,811	3,993	3,780	3,626	3,638	3,548	87.4
New Jersey	3,421	3,399	3,366	3,501	3,572	3,580	3,541	3,585	3,538	3,484	3,366	*2,994*	3,126	83.5
Ohio	1,417	1,240	1,577	1,546	1,425	1,380	1,378	1,479	1,454	1,495	1,487	1,378	*1,165*	73.9
Pennsylvania	1,835	1,692	1,739	1,857	1,842	1,807	1,892	**1,992**	1,986	1,959	1,978	*1,609*	1,667	80.8

August was the month of maximum employment in Alabama, July in New Jersey and Pennsylvania, and February in Ohio.

Prevailing hours of labor.—In Table 6 the average number of wage earners reported for 1914 and 1909 for the industry has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment is classified as a total, even though a few employees worked a greater or less number of hours.

In 1914, 64.2 per cent of the wage earners employed in the industry were in establishments where the prevailing hours were 60 per week, as compared with 76 per cent in 1909, and 34.5 per cent of the wage earners were employed in establishments where the prevailing hours were 54 but less than 60 hours per week, as compared with 20.9 per cent in 1909, showing a drift toward a shorter working day. The table shows the largest numbers in the class "60 hours" per week for both 1909 and 1914 for all the states with the exception of New Jersey in 1914, which shows the largest number—62 per cent of the total—employed between 54 and 60 hours per week. There were no establishments in 1914 or 1909 where the prevailing hours of labor were more than 60 hours per week or between

48 and 54 hours per week, and in 1914 but 1.4 per cent of the total were employed in establishments where the prevailing hours were 48 and under per week, as compared with 3.1 per cent in 1909.

Table 6

STATE.	Census year.	AVERAGE NUMBER OF WAGE EARNERS.					
		Total.	In establishments where the prevailing hours of labor per week were—				
			48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.
United States	1914	12,557	171	.....	1,303	3,026	8,057
	1909	12,228	378	.....	1,425	1,131	9,294
Alabama	1914	3,696	113	.....	795	802	1,986
	1909	2,878	.....	.....	660	.....	2,218
New Jersey	1914	3,421	.....	.....	100	1,875	1,446
	1909	3,275	.....	.....	189	998	2,088
Ohio	1914	1,417	58	.....	303	.....	1,056
	1909	1,730	378	.....	.....	15	1,337
Pennsylvania	1914	1,835	.....	.....	101	194	1,540
	1909	1,435	.....	.....	1	35	1,399

Character of organization.—The statistics concerning the character of ownership for this industry show that the majority of establishments are owned by corporations. The average number of wage earners employed by this class of establishments represented 97.7 per cent of the total number, while the value of products represented 97.4 per cent of the total for the industry.

Size of establishments.—Table 7 gives, for 1914 and 1909, the number of establishments, average number of wage earners, value of products, and value added by manufacture, with per cent distribution for establishments grouped according to the value of their products.

The statistics for 1914 in comparison with 1909 show a marked decrease in the number of establishments with products valued at $1,000,000 and over, as well as in the number of wage earners and value of products reported by such establishments. These establishments reported 38.4 per cent of the total wage earners and 44.3 per cent of the total value of products for 1914, as compared with 58.1 per cent of the wage earners and 61.6 per cent of the value of products for 1909. As a rule the tendency of industrial enterprises is to become concentrated in large establishments, but in the present case the decrease in the largest group is presumably due, in part at least, to the general depression in the iron and steel industries in 1914 on account of the European war, the big plants responding to trade conditions more quickly than the smaller ones. The production of cast-iron pipe and fittings in 1913, according to the annual statistical report of the American Iron and Steel Institute, exceeded that of 1914 by 105,465 tons. The greatest increases appear for establishments with products valued at $100,000 to $1,000,000. In this group the establishments increased from 28 in 1909 to 37 in 1914 and reported 57.3 per cent of the wage earners and 52.6 per cent of the value of products, as compared with 39.4 per cent and 36.5 per cent, respectively, reported for 1909.

Table 7

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	59	12,557	$26,659,365	$9,729,224
	1909	52	12,228	29,153,723	10,269,381
Less than $100,000	1914	[1] 14	550	829,449	398,656
	1909	[2] 11	304	540,922	246,769
$100,000 to $1,000,000	1914	37	7,190	14,027,571	5,684,793
	1909	28	4,815	10,641,104	3,920,565
$1,000,000 and over	1914	8	4,817	11,802,345	3,645,775
	1909	13	7,109	17,971,697	6,102,047
Per cent distribution:					
Less than $100,000	1914	23.7	4.4	3.1	4.1
	1909	21.2	2.5	1.9	2.4
$100,000 to $1,000,000	1914	62.7	57.3	52.6	58.4
	1909	53.8	39.4	36.5	38.2
$1,000,000 and over	1914	13.6	38.4	44.3	37.5
	1909	25.0	58.1	61.6	59.4

[1] Includes one establishment with products valued at less than $5,000 and two establishments each with products valued from $5,000 to $20,000.
[2] Includes one establishment with products valued at less than $5,000 and one establishment with products valued from $5,000 to $20,000.

Table 8 shows the size of establishments in 1914 and 1909, as measured by the number of wage earners employed, for the industry as a whole and for four leading states.

Table 8

STATE.	Census year.	TOTAL.		ESTABLISHMENTS EMPLOYING—											
				1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		Over 500 wage earners.	
		Establishments.	Wage earners (average number).	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States	1914	59	12,557	2	8	3	39	4	132	12	984	18	2,589	14	4,525	6	3,980
	1909	52	12,228	2	3	3	47	4	142	10	786	15	2,391	13	5,403	5	3,456
Alabama	1914	20	3,696	1	4	2	31	1	35	3	237	8	1,149	3	988	2	1,252
	1909	14	2,878	.....	.....	.....	.....	2	74	3	244	5	705	4	1,855	.....	.....
New Jersey	1914	9	3,421	.....	.....	.....	.....	.....	.....	1	100	3	516	3	1,206	2	1,599
	1909	8	3,275	.....	.....	.....	.....	.....	.....	1	57	3	454	1	470	3	2,294
Ohio	1914	8	1,417	.....	.....	1	8	1	36	2	140	1	115	2	538	1	580
	1909	7	1,730	.....	.....	2	35	.....	.....	.....	.....	2	338	2	730	1	627
Pennsylvania	1914	7	1,835	.....	.....	.....	.....	.....	.....	2	193	2	231	2	862	1	549
	1909	5	1,435	1	1	.....	.....	1	35	.....	.....	.....	.....	2	864	1	535

Of the 59 establishments reported in 1914, 21 employed from 1 to 100 wage earners; 18 employed from 101 to 250 wage earners; and 20 employed over 250. There were only 6 establishments that employed more than 500 wage earners, and none with more than 1,000. In this industry there was no establishment reported without wage earners.

Of the total number of wage earners, 9.3 per cent in 1914 and 8 per cent in 1909 were reported by establishments employing from 1 to 100; 20.6 per cent in 1914 and 19.6 per cent in 1909, by establishments employing from 101 to 250; and 70.1 per cent in 1914 and 72.4 per cent in 1909, by establishments employing more than 250 wage earners.

Engines and power.—Table 9 shows, for 1914 and 1909, for the industry, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

The total primary horsepower used in this industry increased 38 per cent between 1909 and 1914. The total horsepower of electric motors reported in 1914 amounted to 28,518, nearly three-fourths of which represented power of motors run by current generated in the establishments reporting. However, the rate of increase for power of this class has not been as rapid as that of the power of motors which are run by rented current.

Table 9

POWER.	NUMBER OF ENGINES OR MOTORS.		HORSEPOWER. Amount.		HORSEPOWER. Per cent distribution.	
	1914	1909	1914	1909	1914	1909
Primary power, total	589	354	25,884	18,737	100.0	100.0
Owned	145	162	17,666	15,950	68.3	85.1
Steam engines and turbines	135	150	15,966	14,385	61.7	76.8
Internal-combustion engines	8	11	1,500	1,505	5.8	8.0
Water wheels, turbines, and motors	2	1	200	60	0.8	0.3
Rented—Electric	444	192	8,198	2,787	31.7	14.9
Electric	1,616	1,189	28,518	19,333	100.0	100.0
Rented	444	192	8,198	2,787	28.7	14.4
Generated by establishments reporting	1,172	997	20,320	16,546	71.3	85.6

Fuel.—Table 10 shows, for 1914, the quantity and kind of fuel used for which data were obtained for the industry as a whole and for four separate states.

Table 10

STATE.	COAL. Anthracite (tons, 2,240 lbs.).	COAL. Bituminous (tons, 2,000 lbs.).	Coke (tons, 2,000 lbs.).	Oil, including gasoline (barrels).	Gas (1,000 cubic feet).
United States	45,663	99,991	248,305	2,036	163,833
Alabama	.....	25,382	88,684	1,067	.....
New Jersey	30,094	17,539	46,446	692	151,013
Ohio	10	23,413	34,806	.....	11,912
Pennsylvania	15,416	16,424	38,294	270	908
All other states	143	17,233	40,375	7	.....

Coke is the principal fuel used in this industry, it being used in the cupola furnaces for melting the iron. It constituted three-fifths of the solid fuels.

SPECIAL STATISTICS RELATING TO PRODUCTS.

The following table shows, by states, the quantity and value of cast-iron pipe and fittings reported for 1914. The quantities are reported in net tons (2,000 pounds).

Table 11

PRODUCT.	UNITED STATES. Tons (2,000 pounds).	UNITED STATES. Value.	ALABAMA. Tons.	ALABAMA. Value.	NEW JERSEY. Tons.	NEW JERSEY. Value.	NEW YORK. Tons.	NEW YORK. Value.	OHIO. Tons.	OHIO. Value.	PENNSYLVANIA. Tons.	PENNSYLVANIA. Value.	ALL OTHER STATES.[1] Tons.	ALL OTHER STATES.[1] Value.
Total value	.....	[2]$26,659,365	.....	$6,754,103	.....	$7,352,798	.....	$370,704	.....	$3,355,043	.....	$4,550,718	.....	$4,275,999
Castings	1,079,584	25,217,687	267,292	6,747,549	265,443	6,400,270	11,862	370,680	155,061	3,229,610	209,701	4,550,718	170,225	3,918,860
Cast-iron pipe and fittings	1,066,003	24,535,950	264,411	6,630,928	263,915	6,338,567	11,772	365,360	152,944	3,100,646	208,604	4,479,442	164,357	3,621,007
Gas and water pipe	880,438	19,035,754	186,415	4,469,284	215,481	4,689,296	876	43,835	150,863	3,019,857	191,179	3,977,619	135,624	2,835,863
Bell-and-spigot pipe	807,306	16,126,690	170,515	3,945,013	193,454	3,828,131	.....	.....	136,816	2,356,499	180,994	3,521,563	125,527	2,475,484
Flanged pipe	21,980	553,871	8,051	176,685	8,918	236,590	.....	.....	3,574	103,537	887	22,185	570	14,874
Culvert pipe	10,952	245,452	2,980	83,651	2,139	41,499	.....	.....	1,475	37,980	704	12,904	3,654	69,418
Fittings	40,200	2,109,741	4,869	263,935	10,970	583,076	876	43,835	8,998	521,841	8,614	420,967	5,873	276,087
Soil and plumbers' pipe and fittings	185,565	5,500,196	77,996	2,161,644	48,434	1,649,271	10,896	321,525	2,081	80,789	17,425	501,823	28,733	785,144
All other castings	13,581	681,737	2,881	116,621	1,528	61,703	90	5,320	2,117	128,964	1,097	71,276	5,868	297,853
All other products	.....	1,441,678	.....	6,554	.....	952,528	.....	24	.....	125,433	.....	.....	.....	357,139

[1] All other states embrace: Georgia, Indiana, Illinois, Maryland, North Carolina, Oregon, Tennessee, and Virginia.
[2] Does not include 54,718 tons of cast-iron pipe and fittings, valued at $1,443,242, made by nine establishments engaged primarily in other lines of manufacture.

The leading states on a tonnage basis are Alabama, New Jersey, Pennsylvania, and Ohio, in the order named, and these states produced more than four-fifths of the tonnage. The bulk of the product is what is known as bell-and-spigot pipe, made with a bell socket at one end, and the other adapted to fit into the bell of a contiguous section.

In addition to the pipe made by the establishments constituting the classified industry, there were 54,718 tons of cast-iron pipe and fittings, valued at $1,443,242, made as subsidiary products by establishments in other industries. This comprises 26,087 tons of soil and plumbers' pipe and fittings, valued at $673,512; 21,599 tons of gas and water, and bell-and-spigot pipe, valued at $542,843; and 7,032 tons of other gas and water pipe and fittings, valued at $226,887.

DETAIL STATE TABLES.

The principal data secured by the census inquiry concerning cast-iron pipe, other than those relating to quantity and value of specific products, are presented, by states, in Tables 12 and 13.

Table 12 shows, for 1914 and 1909, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products for the industry. Table 13 gives for 1914 more detailed statistics of the industry, by states.

TABLE 12.—CAST-IRON PIPE—COMPARATIVE SUMMARY, BY STATES: 1914 AND 1909.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.	STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.								Expressed in thousands.		
United States	1914	59	12,557	25,864	$7,076	$16,930	$26,659	Ohio	1914	8	1,417	7,387	888	2,063	3,355
	1909	52	12,228	18,737	6,502	18,884	29,154		1909	7	1,730	3,158	900	2,722	4,575
Alabama	1914	20	3,696	6,130	2,054	3,907	6,754	Pennsylvania	1914	7	1,835	4,062	1,029	3,295	4,551
	1909	14	2,878	4,632	1,393	3,706	6,097		1909	5	1,435	2,531	711	2,423	3,544
New Jersey	1914	9	3,421	4,785	1,991	4,784	7,353	All other states	1914	12	1,975	3,207	990	2,695	4,276
	1909	8	3,275	4,035	1,951	5,355	8,003		1909	14	2,446	3,329	1,279	3,991	5,955
New York	1914	3	213	293	124	186	370								
	1909	4	464	1,052	268	687	990								

TABLE 13.—CAST-IRON PIPE—DETAIL STATISTICS, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15 OR NEAREST REPRESENTATIVE DAY.				Capital.	EXPENSES.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.		Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male.		Officials.	Clerks, etc.
								Maximum month.	Minimum month.							
United States	59	13,290	8	180	459	86	12,557	Au 13,427	De 11,190	13,099	13,035	14	50	$26,981,070	$501,056	$535,353
Alabama	20	3,876	5	53	111	11	3,696	Au 3,993	Ja 3,491	4,039	4,000	.....	39	5,384,349	135,972	141,170
New Jersey	9	3,636	3	26	163	23	3,421	Jy 3,585	No 2,994	3,438	3,427	6	5	7,508,602	112,799	174,854
New York	3	224	.....	5	4	2	213	Mh 233	No 196	198	198	.....	.....	401,228	7,064	5,852
Ohio	8	1,532	.....	29	69	17	1,417	Fe 1,577	De 1,165	1,473	1,470	3	.....	4,266,729	62,501	79,635
Pennsylvania	7	1,945	.....	27	64	19	1,835	Jy 1,992	No 1,609	1,789	1,779	4	6	5,241,345	85,959	76,786
All other states[1]	12	2,077	.....	40	48	14	1,975	.....	.....	2,162	2,161	1	.....	4,178,817	96,761	57,056

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					Electric horsepower generated in establishments reporting.
	Salaries and wages—Continued.	For contract work	Rent and taxes.		For materials.				Primary horsepower.					
	Wage earners.		Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.	Internal-combustion engines.	Water wheels and motors.	Electric (rented).	
United States	$7,075,976	$2,672	$7,363	$159,863	$15,583,909	$1,346,232	$26,659,365	$9,729,224	25,864	15,966	1,500	200	8,198	20,320
Alabama	2,054,338	.....	120	37,344	3,577,308	329,949	6,754,103	2,846,846	6,130	2,920	30	.....	2,180	3,954
New Jersey	1,991,079	.....	.....	42,672	4,379,831	403,870	7,352,798	2,569,097	4,785	3,155	1,450	.....	180	6,128
New York	124,117	226	.....	2,198	168,801	17,590	370,704	184,313	293	90	.....	.....	203	.....
Ohio	888,209	.....	.....	27,727	1,875,960	186,493	3,355,043	1,292,590	7,387	5,000	20	.....	2,367	5,021
Pennsylvania	1,028,490	.....	2,900	25,316	3,084,740	210,624	4,550,718	1,255,354	4,062	1,866	.....	.....	2,196	3,941
All other states[1]	989,743	2,446	4,343	24,606	2,497,269	197,706	4,275,999	1,581,024	3,207	1,935	.....	200	1,072	1,276

[1] All other states embrace: Georgia, 1 establishment; Indiana, 2; Illinois, 1; Maryland, 1; North Carolina, 1; Oregon, 1; Tennessee, 2; Virginia, 3.

ENGINES AND MACHINERY.

By HARRY B. COHEN.

SUMMARY AND ANALYSIS.

Scope of the industry.—This report presents statistics of the manufacture of engines and machinery in the United States in 1914. Prior to this census separate statistics have not been shown for these industries in recent years, the figures being included with those for the foundry and machine-shop and other industries. Statistics were collected at some of the earlier censuses for certain classes of machinery, but the returns were not so complete and the figures are not comparable.

A considerable proportion of the total output of engines and machinery is produced by establishments engaged primarily in the manufacture of other iron or steel products. Such establishments made but one report of their total capital, persons employed, salaries and wages paid, cost of materials, etc.; therefore it was impossible to compile separate statistics of these items. The only practicable data representing the entire industry pertain to the character of the output, the number, horsepower, and value of the various types of engines manufactured, and the value of each of the more clearly defined classes of machinery.

To facilitate the comparison of the domestic production with the imports and exports, the classification of the products was made to conform as closely as possible with that used by the Bureau of Foreign and Domestic Commerce in compiling the statistics of imports and exports.

Table 1 presents data showing the number of establishments engaged in the production of each of the specified classes of engines and machinery, and the value of the production and exports of each class in 1914. The data include the products of all establishments engaged chiefly in the manufacture of the specified product, as well as most of those made as subsidiary products of other industries.

Table 1

CLASS.	ENGINES AND MACHINERY: 1914. Census of manufactures. Number of establishments.	Census of manufactures. Value.	Exports.
Total			$91,818,664
Adding and calculating machines	44	[1] $14,734,455	1,177,751
Air-compressing machinery	84	5,158,121	388,870
Bakers' machinery	32	2,554,703	[2]
Bottlers' machinery	29	1,358,625	[2]
Brewers' machinery	54	3,881,554	191,272
Brick, pottery, and other clay-working machinery	89	2,438,861	[2]
Cannery machinery	28	1,305,786	[2]
Cash registers and parts	19	[1] 15,935,069	3,267,829
Concrete mixers	44	2,956,058	[2]
Cotton gins	25	4,901,680	102,188
Cranes	26	4,194,457	[2]
Dairy machinery and apparatus:			
Cream separators	36	[1] 8,663,575	304,191
All other	42	[1] 4,334,799	[2]
Elevators and elevator machinery	213	17,228,101	1,057,709
Engines:[3]			
Electric locomotives	10	4,315,172	606,032
Internal-combustion	549	54,250,421	5,307,626
Steam—			
Locomotives	33	39,043,359	2,480,882
All other (marine, stationary, and traction)	243	30,498,638	829,744
All other	52	3,633,008	704,006
Parts		[4] 12,656,537	2,722,975
Excavating machinery (including dredges and steam shovels)	21	2,968,965	[2]
Glass-making machinery	30	1,090,726	[2]
Laundry machines:			
Power machines	73	6,135,321	347,596
All other	35	1,429,958	448,242
Lawn mowers	22	$2,848,119	$376,187
Leather machinery	27	1,066,939	[2]
Metal-working machinery:			
Machine tools	409	31,446,660	14,841,380
All other	277	17,419,526	
Meters, gas and water	40	[1] 11,638,074	[5] 165,128
Milling machinery (flour and grist)	101	5,017,761	893,258
Mining machinery:			
Oil-well machinery	127	10,569,483	7,216,445
All other	153	12,253,634	
Oil-mill machinery	20	1,878,228	[2]
Paper and pulp mill machinery	104	6,811,141	604,553
Paper-working machinery	35	1,777,086	[2]
Printing presses	88	8,396,508	1,937,056
Printing and bookbinding machinery (other than printing presses)	56	3,197,319	[2]
Pumps and pumping machinery	298	[1] 27,456,916	2,999,734
Refrigerating machinery (including ice-making machinery)	73	10,522,322	570,820
Road-making machinery	31	3,545,272	[2]
Rubber machinery	14	2,725,897	[2]
Sewing machines	48	[1] 21,710,643	8,658,762
Shoe machinery	72	5,949,300	1,149,228
Sugar-mill machinery	42	[6] 1,971,543	1,814,137
Textile machinery	241	30,437,689	1,308,048
Typesetting machines, linotype and other	10	7,634,631	1,521,034
Typewriting machines	53	[1] 20,516,532	7,573,145
Vacuum cleaners	39	2,058,524	[2]
Windmills	50	[1] 5,842,778	1,085,730
Woodworking machinery:			
Sawmill machinery	182	6,303,920	460,548
All other	196	7,088,980	894,867
All other machinery and parts			17,880,691

[1] Includes value of all products of establishments engaged primarily in the manufacture of the machines specified.
[2] Not reported separately.
[3] Exclusive of engines made as component parts of other machinery and not reported separately, and of automobile engines made and installed by the manufacturers of the complete machines.
[4] Exclusive of parts made by establishments not engaged in making complete engines.
[5] Figures cover period beginning July 1.
[6] The amount reported includes, presumably, only machinery specially designed for sugar mills and not otherwise available, and does not include large amounts of sugar-mill equipment, such as boilers, tanks, and kettles, which may be included in the figures for exports.

In accepting the statistics in this table it must be understood that the amounts reported do not in all cases represent the entire production of each of the classes shown, for it is possible that in some cases machinery specifically called for was not reported separately. In some instances the manufacturers were not able to segregate the value of the engines from that of any accompanying machinery when sold as a unit. Some machinery is capable of use in a number of different industries, and manufacturers

are not always able to designate the industry using it. Machinery reported under a specific title, such as "shoe machinery" or "textile machinery," does not embrace the entire equipment of a shoe factory or a textile mill, including power-generating machinery, etc., but only machinery of the specific character named.

This condition affects, to a certain extent, the comparability of the statistics of production and exports of machinery as shown in the table. Sometimes exporters include in their reports the entire value of their shipments of a complete plant, under the heading of some one class of machinery, when the shipment includes numerous items, such as power generating and transmission machinery, structural materials, boilers, tanks, etc., belonging outside of that class, as used in this report.

ENGINES.

The statistics of engines include those for all establishments reporting these products and are divided into three main groups according to the type of power used—steam, internal-combustion, and water-power. Engines made as the component parts of other machinery and not reported separately are not included, nor the automobile and motorcycle engines when made and installed by such manufacturers.

In 1914 there were 809 establishments which reported the manufacture of engines, of which 446 were engaged in the manufacture of engines as their chief product, and 363 establishments reported engines as a subsidiary product. Of the 809 establishments, 243 made steam engines, 549 made internal-combustion engines, and 52 made water wheels, motors, and turbines, some of the establishments making more than one type of engine.

The steam and the internal-combustion engines are classified according to type or use—stationary, marine, traction, automobile, aeroplane, motorcycle, etc. The various classes of engines are each segregated according to horsepower (rated or indicated) into the following groups: Under 10 horsepower; 10 to 49 horsepower; 50 to 99 horsepower; 100 to 499 horsepower; 500 to 999 horsepower; and 1,000 horsepower and over.

An attempt was made to segregate the internal-combustion engines into groups according to the fuel used, gas, gasoline, petroleum, alcohol, etc., but owing to the failure of the establishments (chiefly on account of lack of the proper records) to report separately the engines using the various kinds of fuels, and to the interchangeability of many of the internal-combustion engines to the use of various fuels, these facts can not be shown. In some instances the word "gas" on the schedule was interpreted as an abbreviation for "gasoline," thus preventing the publication of separate statistics for gas and gasoline engines.

Table 2 presents statistics of the manufacture of engines in 1914, showing for each class of engines the number, total horsepower, and value, and also the number of each of the various classes grouped according to horsepower.

Table 2

ENGINES: 1914.

CLASS.	Total.			Number by horsepower groups.					
	Number.	Horsepower (rated or indicated).	Value.	Under 10.	10 to 49.	50 to 99.	100 to 499.	500 to 999.	1,000 and over.
All classes	418,526	6,553,956	[1] $88,382,067	293,259	111,156	10,877	2,576	359	299
Steam	19,280	2,365,483	30,498,638	3,061	8,981	4,849	1,890	266	233
Stationary and portable, other than turbines	12,404	805,682	11,821,964	2,449	5,335	2,961	1,426	191	42
Marine, other than turbines	953	73,679	1,299,971	447	362	40	63	21	20
Turbines [2]	1,307	1,312,718	8,662,174	125	288	280	389	54	171
Traction [3]	4,616	173,404	8,714,529	40	2,996	1,568	12	.....	.....
Internal-combustion	380,007	3,680,082	54,250,421	271,764	102,009	5,672	505	42	15
Stationary and portable [4]	250,722	1,144,991	25,606,905	228,967	20,424	925	369	24	13
Automobile [5]	71,745	1,916,293	11,622,961	4,004	64,706	3,035	.....	.....	.....
Marine	44,157	339,638	7,570,245	35,952	7,657	417	112	17	2
Traction [6]	10,534	250,860	8,936,687	141	9,204	1,171	17	1	.....
All other (aeroplane, motorcycle [7])	2,849	28,300	513,623	2,700	18	124	7	.....	.....
Water wheels, motors, and turbines	19,239	508,391	3,633,008	18,434	166	356	181	51	51

[1] In addition, establishments engaged in the industry in 1914 reported parts and other products valued at $23,156,609.
[2] Includes 11 marine steam turbines of 121,000 horsepower.
[3] Includes 9 automobile steam engines of 294 horsepower; value $4,750.
[4] Includes 50 fire engines of 1,200 horsepower.
[5] Not including those made by automobile manufacturers; about 568,000 gasoline and steam automobiles were made in 1914.
[6] Includes 15 gasoline locomotives.
[7] Not including those made by motorcycle manufacturers; about 63,000 motorcycles were made in 1914.

Internal-combustion engines include those using gas, gasoline, petroleum, alcohol, etc., as fuel, and comprised more than one-half of the total horsepower, more than six-tenths of the value of the engines manufactured, and more than nine-tenths of the total number reported. The great bulk of the internal-combustion engines were rated as having less than 50 horsepower—only 6,234, or less than 2 per cent, having more than 49 horsepower. The largest class of internal-combustion engines were of the stationary and portable type, including farm, pumping, logging, mine, air-compressor, hoisting, power-generating, and

various other types of general-purpose engines. More than nine-tenths of these engines were of less than 10 horsepower. The figures shown for automobile engines include only those made outside of establishments manufacturing complete automobiles, and represent but a small proportion of the automobile engines manufactured in 1914, as more than 568,000 gasoline and steam automobiles were produced in that year. Data regarding the distribution of the output of these automobiles, by states and by horsepower ratings, will be found in Table 4. Marine internal-combustion engines include those of the Diesel and other types using heavy oils (principally in the larger sizes), but the greater part of the production consisted of small engines for power launches, motor boats, etc. Traction engines include tractors of all types operated by internal-combustion engines, whether for farm or road uses, and nearly nine-tenths of the total number were rated at from 10 to 49 horsepower. "All other" includes aeroplane and motorcycle engines which were manufactured outside of establishments making the completed machines. The motorcycle engines included in this class represented, however, only a small proportion of the total output, as there were nearly 63,000 motorcycles manufactured in 1914.

Steam engines was the next largest class, comprising all those propelled by steam power, with the exception of steam locomotives, which were classified separately. They include the following distinct types: Stationary and portable, other than turbines; marine, other than turbines; turbines; and traction engines. Turbines are operated almost exclusively by steam power and are used for marine and stationary work. A much larger proportion of the steam engines produced are used in industrial operations than is the case with internal-combustion engines. The latter, to a large extent, are used for farm and general-utility purposes. As a result, the proportion of steam engines manufactured in the smaller sizes, particularly in those rated as having less than 10 horsepower, is much smaller than the corresponding figure for internal-combustion engines. Less than one-sixth of the total number of steam engines was rated as having less than 10 horsepower, and but slightly more than one-third had 50 horsepower or more. The stationary and portable type, other than turbines, comprised nearly two-thirds of the total number of steam engines, but only about one-third of the horsepower and value, due mostly to their being made in smaller units and their comparative simplicity of construction. Traction engines were the next most important class in number and value, being largely in the groups "10 to 49" and "50 to 99" horsepower. Turbines, although having the largest total horsepower of any type of steam engines produced, were third in number and value, due, no doubt, to the large size of the units and the remarkable efficiency of this type.

Water wheels, motors, and turbines, although forming the same proportion of the total in number as the steam engines, were of minor importance from the standpoint of horsepower and value of products. The large number of units shown for this class was caused by the inclusion of many small water motors useful mostly for household purposes.

Table 3 shows, for 1914, the number, horsepower, and value of each class of engines, by states, and the per cent distribution.

Table 3 ENGINES—STEAM, GAS, AND WATER (NOT INCLUDING LOCOMOTIVES): 1914.

CLASS OF ENGINE AND STATE.	Number.	Horsepower (rated or indicated).	Value.	Per cent distribution.	
				Horsepower.	Value.
United States	418,526	6,553,956	[1] $88,382,067		
Steam engines	19,280	2,365,483	30,498,638	100.0	100.0
Illinois	911	39,997	781,390	1.7	2.6
Indiana	720	29,649	1,026,567	1.3	3.4
Massachusetts	494	80,516	958,681	3.4	3.1
Michigan	3,331	64,442	2,726,979	2.7	8.9
Minnesota	1,115	35,215	1,311,445	1.5	4.3
New Jersey	705	43,768	1,152,957	1.9	3.8
New York	1,549	594,953	3,402,368	25.2	11.2
Ohio	1,260	127,587	2,576,823	5.4	8.4
Pennsylvania	5,715	937,119	10,200,938	39.6	33.4
Wisconsin	1,854	270,114	4,363,195	11.4	14.3
All other states	1,656	142,123	1,997,355	6.0	6.5
Internal-combustion engines	380,007	3,680,082	54,250,421	100.0	100.0
California	2,131	52,933	2,432,947	1.4	4.5
Connecticut	6,944	83,709	2,061,691	2.3	3.8
Illinois	36,156	233,420	4,627,005	6.4	8.5
Indiana	18,258	198,448	2,901,362	5.4	5.3
Iowa	50,431	163,255	3,499,670	4.4	6.5
Michigan	97,453	1,616,902	11,523,695	43.9	21.2
Minnesota	8,444	103,432	2,849,988	2.8	5.3
Missouri	7,919	41,806	937,154	1.1	1.7
New York	9,579	185,370	3,963,591	5.0	7.3
Ohio	15,313	222,680	3,961,562	6.1	7.3
Pennsylvania	12,035	180,293	3,469,281	4.9	6.4
Wisconsin	101,108	515,687	10,392,495	14.0	19.2
All other states	14,236	82,147	1,629,980	2.2	3.0
Water wheels, motors, and turbines	19,239	508,391	3,633,008	100.0	100.0
Ohio	17,694	118,163	832,029	23.2	22.9
Pennsylvania	282	261,620	2,111,912	51.5	58.1
All other states	1,263	128,608	689,067	25.3	19.0

[1] In addition, establishments engaged in the industry in 1914 reported parts and other products valued at $23,156,609.

Pennsylvania was the leading state in the manufacture of steam engines, water wheels, motors, and turbines, reporting 39.6 per cent of the total horsepower and 33.4 per cent of the total value of the former class and 51.5 per cent and 58.1 per cent of the latter, respectively. Michigan ranked first in the manufacture of internal-combustion engines, with 43.9 per cent of the horsepower and 21.2 per cent of the value. New York ranked second in horsepower of steam engines manufactured, but Wisconsin ranked second in value. Wisconsin also ranked second both in horsepower and value of internal-combustion engines. Ohio ranked second in the manufacture of water wheels, motors, and turbines.

Table 4 presents statistics of the output of gasoline and steam automobiles in 1914, by states. The number of these machines produced in each of the states shown in the table is classified according to the horsepower of the engines with which they are equipped.

Table 4

HORSEPOWER (rated or indicated).	GASOLINE AND STEAM [1] AUTOMOBILES MANUFACTURED IN 1914, BY ESTABLISHMENTS ENGAGED IN THE INDUSTRY IN—					
	United States.	Michigan.	New Jersey.	Ohio.	Wisconsin.	All other states.
Total number	[2] 564,385	441,411	1,173	65,857	10,030	45,914
Under 10	283	276	2	.....	.....	5
10 to 19	45,022	39,250	17	1,609	.....	4,146
20 to 29	344,336	313,395	443	9,940	11	20,547
30 to 49	161,722	79,254	708	54,029	8,166	19,565
50 to 89	12,843	9,236	3	275	1,853	1,476
90 and over	179	.....	.....	4	.....	175

[1] Figures for steam automobiles combined with those for gasoline automobiles to avoid disclosure of operations of individual establishments.
[2] In addition, 3,985 automobiles were manufactured in 1914 by establishments engaged primarily in other industries.

Large numbers of gasoline and steam engines were made by establishments engaged in the manufacture of automobiles. These engines, together with most of the automobile engines made outside of automobile factories, were installed in the machines and the value reported only as part of the completed automobile in the report for that industry. Separate figures, however, were secured as to the horsepower ratings of the automobile engines, by groups.

The greater number of these engines were of 20 to 49 horsepower—Michigan being the leading state in their manufacture, and Ohio, second. In addition to the figures shown in the table, 3,985 automobiles were made by establishments engaged primarily in the manufacture of other products.

MACHINERY.

The statistics regarding the production of the more important and clearly defined classes of machinery in 1914 are shown in this report. A few of these classes had been shown separately at prior censuses, among them being cash registers, sewing machines, and typewriters. The classes of machinery, however, included under what is generally known as "factory machinery," had been included with foundry and machine-shop products, and separate statistics for the various classes of factory machinery have not been shown in recent census years.

In compiling the statistics for the various classes of machinery only the reports for establishments making the complete machines either as a primary or subsidiary product were considered, reports for the establishments making only parts of machinery being excluded.

Table 5 presents, for 1914, statistics relating to the production of each of the more important classes of machinery for the 10 states having the largest combined output of these classes.

Table 5

CLASS.	VALUE OF MACHINERY OF THE CLASSES SPECIFIED, REPORTED IN 1914 BY ESTABLISHMENTS, IN—											
	United States.	Connecticut.	Illinois.	Massachusetts.	Michigan.	New Jersey.	New York.	Ohio.	Pennsylvania.	Rhode Island.	Wisconsin.	All other states.
Adding and calculating machines [1]	$14,734,455	(2)	(2)	(2)	(2)	(2)	$190,996	$1,362,144	(2)	(2)	(2)	$13,181,315
Air-compressing machinery	5,158,121	(2)	$383,854	.....	$53,214	(2)	1,241,992	140,623	$1,710,617	.....	(2)	1,627,821
Brewers' machinery	3,881,554	.....	836,152	(2)	(2)	(2)	702,164	756,292	117,066	.....	(2)	1,469,880
Brick, pottery, and other clay-working machinery	2,438,861	(2)	128,035	.....	101,545	$156,056	52,302	1,449,365	290,101	(2)	(2)	261,457
Cash registers and parts [1]	15,935,069	(2)	(2)	(2)	(2)	.....	(2)	(2)	(2)	(2)	(2)	15,935,069
Cotton gins	4,901,680	(2)	23,270	(2)	.....	.....	.....	.....	(2)	.....	.....	4,878,410
Dairy machinery and apparatus [1]	12,998,374	(2)	827,641	.....	345,407	(2)	5,543,602	36,176	(2)	.....	$1,028,428	5,217,120
Elevators and elevator machinery	17,228,101	(2)	4,340,188	$665,316	(2)	1,653,306	4,911,866	1,292,030	1,756,117	(2)	316,221	2,293,057
Glass-making machinery	1,090,726	.....	(2)	.....	(2)	(2)	(2)	(2)	101,198	.....	.....	989,528
Laundry machines	7,565,279	$171,361	2,930,262	340,952	(2)	(2)	1,607,411	1,056,330	149,280	(2)	64,191	1,245,492
Lawn mowers	2,848,119	.....	113,530	(2)	(2)	(2)	(2)	(2)	634,591	.....	.....	2,099,998
Machine tools (machines which employ a tool for working on metal)	31,446,660	3,280,940	1,935,861	3,042,894	1,179,761	1,558,412	1,782,494	9,014,178	2,466,198	$3,679,190	1,004,812	2,501,920
Metal-working machinery, other than machine tools	17,419,526	2,407,987	1,902,651	859,608	280,564	546,346	3,160,369	2,909,389	4,069,278	174,490	209,052	899,792
Meters, gas and water [1]	11,638,074	(2)	(2)	1,960,958	(2)	(2)	4,077,925	389,139	3,061,178	(2)	(2)	2,148,874
Milling machinery (flour and grist)	5,017,761	(2)	611,803	.....	102,213	(2)	397,659	80,319	897,884	.....	625,315	2,302,568
Mining machinery	13,253,634	(2)	781,417	.....	(2)	(2)	215,618	1,238,251	2,630,055	.....	1,553,254	6,835,039
Oil-well machinery	10,569,483	.....	49,410	.....	.....	.....	57,823	2,277,169	3,328,783	.....	.....	4,856,298
Oil-mill machinery	1,878,228	(2)	(2)	(2)	.....	(2)	.....	(2)	.....	.....	.....	1,878,228
Paper and pulp mill machinery	6,811,141	165,622	(2)	1,496,564	(2)	104,530	1,293,534	701,348	(2)	.....	917,805	2,131,738
Printing presses	8,396,508	673,308	(2)	700,460	(2)	775,705	2,418,213	978,423	76,419	(2)	(2)	2,773,980
Pumps and pumping machinery [1]	27,456,916	(2)	1,178,131	4,903,285	1,130,625	4,502,871	4,758,827	2,381,582	2,998,224	(2)	1,530,856	4,072,515
Refrigerating machinery (including ice-making machinery)	10,522,322	(2)	1,271,407	.....	(2)	482,265	897,756	1,069,565	(2)	.....	(2)	6,801,329
Sewing machines [1]	21,710,643	(2)	(2)	1,718,423	(2)	(2)	797,780	4,508,758	.....	(2)	(2)	14,685,682
Shoe machinery	5,949,300	(2)	.....	4,897,573	(2)	.....	43,401	(2)	(2)	32,726	(2)	975,600
Sugar-mill machinery	1,971,543	(2)	(2)	(2)	(2)	.....	457,768	(2)	187,470	.....	(2)	1,326,305
Textile machinery	30,437,689	804,616	606,296	16,884,947	(2)	1,055,958	654,112	(2)	3,705,835	3,923,988	.....	2,801,937
Typesetting machines, linotype and other	7,634,631	.....	.....	(2)	(2)	(2)	(2)	.....	(2)	(2)	.....	7,634,631
Typewriting machines [1]	20,516,532	6,394,460	(2)	.....	(2)	(2)	10,041,965	.....	(2)	.....	.....	4,080,107
Windmills [1]	5,842,778	.....	3,209,964	(2)	(2)	(2)	(2)	(2)	.....	.....	1,119,069	1,513,745
Woodworking machinery	13,392,900	(2)	422,288	948,326	1,390,660	302,424	1,104,834	2,236,601	1,127,224	(2)	2,891,078	2,969,465

[1] Figures shown include the value of all products of establishments engaged primarily in the manufacture of the machines specified.
[2] Included with "all other states," to avoid the disclosure of operations of individual establishments.

Among the various classes of machinery shown are several which are produced chiefly by one or two large establishments in the states listed. In some of the classes this condition prevailed in nearly all of the states, making it necessary to group the figures with those for "all other states," to avoid disclosure of the operations of individual establishments.

Adding and calculating machines were manufactured chiefly in Michigan, Pennsylvania, Ohio, and Illinois, ranking in the order named, each state report-

ing over $1,000,000 in products. These four states combined produced more than nine-tenths of the entire value of products.

Air-compressing machinery was reported chiefly from Pennsylvania and New York, ranking first and second, respectively, and together reporting nearly three-fifths of the total value of the output. New Jersey and Wisconsin each reported products of more than one-half million dollars.

Brewers' machinery was reported chiefly by establishments in Illinois, Ohio, and New York, ranked in the order named. These states had a combined value of products of more than one-half of the total.

Brick, pottery, and other clay-working machinery was, to a large extent, reported from Ohio, where the industry was centralized. More than one-half of the total output was produced by establishments in this state.

Cash registers were nearly all produced in Ohio, but the figures can not be shown separately without disclosing the operations of individual establishments.

Cotton gins were not manufactured to any extent in the states shown. The chief production of this class of machinery was reported from four states—Georgia, Texas, Alabama, and Louisiana—in the order named, the first three states each having products valued at over $1,000,000.

Dairy machinery (including cream separators) was manufactured chiefly in New York, which state reported nearly one-half of the total output of this class of products. Iowa, which is among "all other states," ranked second with products valued at $1,849,543, and Pennsylvania and Wisconsin ranked third and fourth, respectively.

Elevators and elevator machinery were reported in each of the states shown. New York was the leading state in the industry and Illinois ranked second. These two states produced more than one-half of the total value of products. Pennsylvania, New Jersey, and Ohio ranked third, fourth, and fifth, respectively.

Glass-making machinery was reported as manufactured in comparatively few states, and figures for only one state can be shown separately. Of the total value reported for this class, a large proportion was in Ohio, which can not be shown.

Laundry machines, both hand and power, were manufactured chiefly in Illinois, where more than one-third of the total value of products were made, and in New York and Ohio, which ranked second and third, respectively.

Lawn mowers were reported as manufactured in seven of the states shown in the table, but separate figures could be shown for two states only. New York ranked first, with an output valued at more than one-half million dollars, and Pennsylvania ranked second.

Machine tools (as machines which employ a tool for working on metal are known) was the largest, according to value of product, of the various classes of machinery shown in the table. Ohio was the leading state in the production of this class of machinery, with products constituting over one-fourth of the total reported for all states combined. Rhode Island ranked second, Connecticut third, and Massachusetts fourth.

In the manufacture of metal-working machinery (other than machine tools) Pennsylvania was the leading state in the value of output, with New York ranking second, Ohio third, and Connecticut fourth. The four states combined contributed nearly three-fourths of the total value of products.

Meters, gas and water, were reported chiefly from New York and Pennsylvania, which states ranked first and second, respectively, and together reported over two-thirds of the total output.

Milling machinery (flour and grist) was manufactured in 8 of the 10 states shown. Pennsylvania was the leading state in this branch of manufacture, with Iowa, which was included under "all other states," second, with an output of $865,379, and Illinois third.

Mining machinery was manufactured to a considerable extent in states where one or two establishments reported a preponderance of the total output. Separate figures could not be shown for this reason for New Jersey, the leading state, which reported products in excess of $3,000,000. Pennsylvania, Wisconsin, and Ohio ranked second, third, and fourth, respectively, in this branch of manufactures.

Oil-well-machinery manufacturing was centered in Pennsylvania and Ohio, which ranked first and second, respectively. These states combined represented more than one-half of the total value of output. New Hampshire and West Virginia, included in "all other states," were third and fourth, respectively. New Hampshire reported products valued at over $1,000,000, and the amount for West Virginia was $726,544.

Oil-mill machinery could not be shown separately for any of the states. Massachusetts and Georgia ranked first and second, respectively, in value of output.

In the manufacture of paper and pulp mill machinery Massachusetts was the leading state and New York was second. Delaware, which was included under "all other states," reported a product of nearly $1,000,000.

Printing presses were manufactured chiefly in New York, Illinois, and Ohio, which ranked first, second, and third, respectively, in value of output. These states together had nearly two-thirds of the total value of the product.

Pumps and pumping machinery, as shown in this report, included only the various kinds of power pumps. Massachusetts was the leading state and New York and New Jersey ranked second and third, respectively. These states combined reported nearly one-half of the total value of production.

Refrigerating machinery (including ice-making machinery) was reported largely from states where the greater part of the output was produced by one or two establishments, and therefore could not be shown separately in Pennsylvania, the leading state, and in Wisconsin, the second; Illinois ranking third.

Sewing machines were reported chiefly from New Jersey, which ranked first, with a production of nearly $8,000,000, while Ohio and Illinois, which ranked second and third, respectively, each had an output of approximately $4,000,000. Connecticut, ranking fourth, was also an important state in this branch of manufactures.

Shoe machinery was, to a large extent, reported from Massachusetts, which state produced over four-fifths of the total output. Missouri, figures for which are included with "all other states," ranked second.

Textile machinery was the second largest class in value of output of the various classes of machinery shown in the table. Massachusetts was the leading state in value of products and reported more than half of the total, with Rhode Island and Pennsylvania ranking second and third, respectively.

Typesetting machines, linotype and other, could not be shown separately for any of the states without disclosing the operations of individual establishments. New York was the leading state in the production of this class of machinery, with an output of more than $6,000,000, or about four-fifths, and Pennsylvania, which reported an output of over $1,000,000, ranked second.

Typewriting machines were manufactured in only a few states, New York, which held first place, and Connecticut, which ranked second, having together over four-fifths of the total value of output. Illinois ranked third and Pennsylvania ranked fourth, each reporting over $1,000,000 in products.

Windmills were reported as manufactured chiefly in two states, Illinois and Wisconsin, which ranked first and second, respectively. Illinois reported over one-half of the total value of products. Indiana ranked third.

In the manufacture of woodworking machinery (including sawmill machinery) Wisconsin, Ohio, Michigan, and Pennsylvania ranked in the order named in the value of their output.

ELECTRICAL MACHINERY, APPARATUS, AND SUPPLIES.

By Estelle E. Deisher.

SUMMARY AND ANALYSIS.

Scope of the industry.—This report covers the manufacture of machinery, apparatus, and supplies for use in the generation, transmission, or utilization of electric energy. In addition to dynamos, transformers, switchboards, motors, and batteries, for its generation, regulation, application, and storage, the general utilization of electric energy for supplying power, transportation, light, heat, intelligence, etc., involves the use of a vast variety of electrical manufactures, such as insulated wire and cables, starting and controlling apparatus, electric measuring instruments, telephone and telegraph apparatus, incandescent and arc lamps, electric heating and cooking apparatus, flatirons, therapeutic apparatus, circuit fittings, and other supplies. The report takes no cognizance of the manufacture of poles, glass and porcelain ware for electrical purposes, the drawing of copper wire, nor the production of electrochemical and electrometallurgical products. Statistics of electric lighting fixtures made in establishments engaged primarily in their manufacture are not included in this report, but are shown separately in the general report on manufactures.

Comparison with earlier censuses.—Table 1 summarizes the statistics of establishments engaged in the manufacture of electrical machinery, apparatus, and supplies for each census from 1879 to 1914, and gives percentages of increase.

Table 1

	NUMBER OR AMOUNT.						PER CENT OF INCREASE.[1]				
	1914	1909	1904	1899	1889	1879	1909–1914	1904–1909	1899–1904	1889–1899	1879–1889
Number of establishments	1,030	1,009	784	581	189	76	2.1	28.7	34.9	207.4	148.7
Persons engaged	144,712	105,600	71,485	(2)	(2)	(2)	37.0	47.7	.....	.....	.....
Proprietors and firm members	368	439	400	(2)	(2)	(2)	−16.2	9.8	.....	.....	.....
Salaried employees	26,266	17,905	10,619	5,067	(2)	(2)	46.7	68.6	109.6	.....	.....
Wage earners (average number)	118,078	87,256	60,466	42,013	8,802	1,271	35.3	44.3	43.9	377.3	.....
Primary horsepower	227,731	158,768	105,376	43,674	7,494	(2)	43.4	50.7	141.3	.....	.....
Capital	$355,724,756	$267,844,432	$174,066,026	$83,659,924	$18,997,337	$1,509,758	32.8	53.9	108.1	340.4	1,158.3
Salaries and wages	109,097,610	69,574,540	42,932,406	25,210,917	5,366,188	683,164	56.8	62.1	70.3	369.8	685.5
Salaries	35,291,281	20,193,395	11,090,885	4,631,723	(2)	(2)	74.8	82.1	139.5	.....	.....
Wages	73,806,329	49,381,145	31,841,521	20,579,194	(2)	(2)	49.5	55.1	54.7	.....	.....
Paid for contract work	290,889	368,049	266,410	(2)	(2)	(2)	−21.0	38.2	.....	.....	.....
Rent and taxes (including internal revenue)	3,286,870	1,962,722	[3] 1,334,837	(2)	(2)	(2)	67.4	47.0	.....	.....	.....
Cost of materials	154,728,076	108,566,404	66,836,926	49,458,272	8,819,498	1,116,470	42.5	62.4	35.1	460.8	689.9
Value of products [4]	335,170,194	221,308,563	140,809,369	92,434,435	19,114,714	2,655,036	51.4	57.2	52.3	383.6	619.9
Value added by manufacture	180,442,118	112,742,159	73,972,443	42,976,163	10,295,216	1,538,566	60.0	52.4	72.1	317.4	569.1

[1] A minus sign (−) denotes decrease. [2] Figures not available. [3] Exclusive of internal revenue.
[4] Not including the value of electrical machinery, apparatus, and supplies made in establishments primarily engaged in other industries, to the value of $24,261,961 for 1914; $18,728,916, for 1909; $18,742,033, for 1904; and $13,397,430, for 1899.

Electrical apparatus first appeared among the classified industries at the census of 1850, when 2 establishments, engaged primarily in the manufacture of electro-magnetic instruments, were reported with products valued at $5,100. At the census of 1860 there were 4 establishments with products valued at $59,000, but at the census of 1870, which covered the year 1869, the industry was not separately reported. At the census of 1879 there were 76 establishments reported as engaged in the manufacture of electrical apparatus and supplies, including telegraph and telephone apparatus. These establishments gave employment to 1,271 wage earners, and their products were valued at $2,655,036. The industry increased rapidly during the 35 years covered by Table 1.

The decrease in proprietors and firm members for 1914 as compared with 1909 is in keeping with the tendency to incorporate the business of firms and individuals, more particularly the former, the proprietors and firm members becoming officers and managers of incorporated companies. Contract work is a relatively small item and may show considerable increase or decrease at different censuses, depending upon the methods followed during the respective years.

Although in most items the per cent of increase for 1909–1914 is less than that for 1904–1909, on account of the larger base on which the former is computed, the actual gains for 1914 as compared with 1909 for every item, except number of establishments, proprietors and firm members, capital, and contract work, exceed the gains for any prior five-year period.

Summary, by states.—Table 2 summarizes the more important statistics of the industry, by states, the states being arranged according to the value of products reported for 1914. Kentucky, South Carolina, Washington, and Tennessee, for which data can not be shown separately without disclosing the operations of individual establishments, ranked sixteenth, nineteenth, twenty-first, and twenty-second, respectively, in value of products.

Table 2

STATE.	Number of establishments.	ELECTRICAL MACHINERY, APPARATUS, AND SUPPLIES: 1914. Wage earners. Average number.	Per cent distribution.	Rank. 1914	Rank. 1909	Value of products. Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	Value added by manufacture. Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	PER CENT OF INCREASE.[1] Wage earners (average number). 1909–1914	1904–1909	1899–1904	Value of products. 1909–1914	1904–1909	1899–1904	Value added by manufacture. 1909–1914	1904–1909	1899–1904
United States	1,030	118,078	100.0	....	....	$335,170,194	100.0	....	....	$180,442,118	100.0	....	....	35.3	44.3	43.9	51.4	57.2	52.3	60.0	52.4	72.1
New York	215	23,738	20.1	1	1	73,944,708	22.0	1	1	35,919,949	19.9	1	1	25.1	16.4	57.2	50.0	39.4	55.8	64.7	24.6	72.3
Illinois	142	16,483	13.9	3	5	45,667,456	13.6	2	5	26,288,292	14.6	3	5	71.0	57.2	1.4	70.2	60.6	37.2	99.2	45.8	20.8
Pennsylvania	105	14,866	12.6	4	4	44,395,789	13.2	3	2	27,155,769	15.1	2	2	34.8	17.2	20.3	41.6	19.4	37.4	52.4	19.6	92.4
Massachusetts	91	17,125	14.5	2	2	43,869,294	13.1	4	4	26,172,387	14.5	4	3	18.0	64.9	69.1	55.9	77.2	51.4	69.9	80.0	63.3
New Jersey	76	14,405	12.2	5	3	40,740,810	12.2	5	3	20,191,534	11.2	5	4	29.8	77.1	60.1	43.6	105.5	83.2	44.8	101.1	73.5
Ohio	119	12,695	10.8	6	6	36,120,978	10.8	6	6	18,638,730	10.3	6	6	57.3	57.9	35.5	92.4	70.4	69.4	61.4	82.8	99.6
Connecticut	43	5,059	4.3	7	7	14,330,156	4.3	7	7	6,894,026	3.8	7	7	44.3	105.3	77.6	45.9	98.9	55.9	49.4	111.0	83.1
Indiana	41	4,075	3.4	8	8	8,879,178	2.6	8	8	4,948,531	2.7	8	8	32.6	117.0	60.7	15.0	170.1	80.1	23.0	124.9	123.2
Missouri	19	2,560	2.2	9	12	6,643,210	2.0	9	11	4,227,457	2.3	9	10	141.5	33.3	49.2	104.4	86.7	91.1	97.0	89.2	104.1
Rhode Island	13	1,581	1.3	11	9	5,468,065	1.6	10	9	1,674,995	0.9	12	11	−1.2	13.6	63.1	−14.7	17.9	6.3	−7.7	28.0	45.0
Wisconsin	29	2,115	1.8	10	10	5,396,802	1.6	11	10	3,333,082	1.9	10	9	50.1	17.0	128.5	40.7	20.1	245.7	39.7	9.7	284.8
Michigan	35	1,144	1.0	12	11	3,415,500	1.0	12	12	1,675,952	0.9	11	12	−6.1	130.2	187.5	46.8	231.5	60.3	29.2	217.9	59.4
California	29	780	0.7	13	13	2,861,653	0.9	13	13	1,301,395	0.7	13	13	79.3	7.9	69.3	77.4	60.7	80.6	90.0	20.2	189.3
Minnesota	17	236	0.2	14	15	748,948	0.2	14	15	401,107	0.2	14	15	26.2	10.0	.....	42.4	24.1	86.1	31.0	29.1	123.6
West Virginia	4	162	0.1	16	18	566,368	0.2	15	16	382,306	0.2	15	16	18.2	.....	.....	42.2	.....	.....	45.3	.....	.....
New Hampshire	6	228	0.2	15	14	351,877	0.1	17	17	186,869	0.1	17	17	18.1	.....	.....	−9.3	158.7	−17.6	19.7	.....	.....
Iowa	5	94	0.1	19	23	234,760	0.1	18	19	147,545	0.1	18	19	.....	.....	.....	17.5	.....	.....	18.4	.....	.....
North Carolina	4	78	0.1	22	20	177,075	0.1	20	22	70,799	(2)	24	25	−35.0	.....	.....	18.0	.....	.....	.....	.....	.....
Colorado	8	79	0.1	21	....	138,451	(2)	23	....	85,240	0.1	20	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maryland	6	66	(2)	24	19	121,034	(2)	24	23	81,343	(2)	23	22	−45.5	−24.8	3.9	−17.7	−34.7	−15.7	.....	−29.5	−14.8
All other States	23	509	0.4	....	....	1,098,082	0.3	....	....	664,810	0.4	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....

[1] Percentages are based on figures in Table 31; a minus sign (−) denotes decrease. Percentages are omitted where base is less than 100 for wage earners or less than $100,000 for value of products or value added by manufacture, or when comparable figures can not be given.
[2] Less than one-tenth of 1 per cent.

Although establishments engaged in the manufacture of one or more of the various classes of products embraced in this industry were reported from 33 states and the District of Columbia in 1914, the industry was largely centralized, as in 1909, in the 6 states of New York, Illinois, Pennsylvania, Massachusetts, New Jersey, and Ohio. These states reported 84.1 per cent of the total average number of wage earners, 85 per cent of the total value of products, and 85.5 per cent of the total value added by manufacture. There were, however, some changes in the relative rank of these states as measured by the value of products in 1914 as compared with 1909. Pennsylvania ranked second in 1909, but third in 1914. Illinois advanced from fifth to second place. New Jersey ranked third in 1909 but fifth in 1914, and Massachusetts was fourth at both censuses.

New York was the leading state in the industry, ranking first at the censuses of 1914, 1909, and 1904. During 1914 the state produced electrical machinery, apparatus, and supplies to the value of nearly $74,000,000, or more than one-fifth of the total for the United States. The number of wage earners employed in the state increased 25.1 per cent during the census period ending with 1914, while the value of products increased 50 per cent and the value added by manufacture 64.7 per cent.

Illinois showed the most conspicuous gains among the six leading states. The average number of wage earners increased by 6,842, or 71 per cent, and the value added by manufacture, $13,090,000, or 99.2 per cent. Although Pennsylvania showed substantial increases in the three items, the state merely held its rank in value added by manufacture, which increased $9,340,000, or 52.4 per cent, and in average number of wage earners which increased 3,841, or 34.8 per cent, while in value of products, which increased $13,045,000, or 41.6 per cent, it was surpassed by Illinois.

Persons engaged in the industry.—Table 3 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, and the average number of wage earners, distributed by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Table 3

CLASS.	Census year.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Male.	Female.	Per cent of total. Male.	Female.
All classes	1914	144,712	114,742	29,970	79.3	20.7
	1909	105,600	81,616	23,984	77.3	22.7
Proprietors and officials	1914	4,246	4,164	82	98.1	1.9
	1909	4,121	4,055	66	98.4	1.6
Proprietors and firm members	1914	368	357	11	97.0	3.0
	1909	439	428	11	97.5	2.5
Salaried officers of corporations	1914	1,165	1,129	36	96.9	3.1
	1909	997	979	18	98.2	1.8
Superintendents and managers	1914	2,713	2,678	35	98.7	1.3
	1909	2,685	2,648	37	98.6	1.4
Clerks and other subordinate salaried employees	1914	22,388	16,325	6,063	72.9	27.1
	1909	14,223	10,431	3,792	73.3	26.7
Wage earners (average number)	1914	118,078	94,253	23,825	79.8	20.2
	1909	87,256	67,130	20,126	76.9	23.1
16 years of age and over	1914	117,364	93,836	23,528	80.0	20.0
	1909	86,453	66,622	19,831	77.1	22.9
Under 16 years of age	1914	714	417	297	58.4	41.6
	1909	803	508	295	63.3	36.7

The average number of persons engaged in the industry during 1914 was 144,712, of whom 118,078, or 81.6 per cent, were wage earners; 4,246, or 2.9 per cent, proprietors and officials; and 22,388, or 15.5 per cent, clerks, this class including other subordinate salaried employees. While 29,970 females were employed in this industry, 79.3 per cent of the total for 1914 were males. The largest number of females (23,825) were wage earners and they formed 20.2 per cent of the total number in this class. The largest proportion of females, 27.1 per cent, is shown for clerks and other subordinate salaried employees. The proportion of females of all classes decreased from 22.7 per cent in 1909 to 20.7 per cent in 1914.

The average number of wage earners, as reported at the censuses of 1914, 1909, and 1904, is given, by states, in Table 31, and Table 32 gives, for 1914, the distribution by sex of the number employed on December 15, or the nearest representative day, for the individual states. Female wage earners were reported in 24 of the states, the largest number, 4,291, being reported in New Jersey, and the next largest number, 3,424, in Massachusetts. Most of the wage earners under 16 years of age were reported from Connecticut, Pennsylvania, Massachusetts, New York, and New Jersey, in the order named.

Table 4 gives, for the several classes of persons engaged in the industry, the percentages of increase from 1909 to 1914 and the per cent distribution at the two censuses.

With the exception of proprietors and firm members and wage earners under 16 years of age, there was an increase in the number reported for each class shown in Table 4. The largest ratio of increase is shown for clerks and other subordinate salaried employees, and of the three main classes of employees, this is the only one that shows an increased proportion of the total both in the total number of such employees and as reported separately by sex. Though small the number and proportion of female proprietors and officials increased significantly. For all classes combined and for every other class, except that of wage earners under 16 years of age, the greatest increases during the five-year period are shown for the number of males.

Table 4

CLASS.	PERSONS ENGAGED IN THE INDUSTRY.									
	Per cent of increase,[1] 1909–1914.			Per cent distribution.					
	Total.	Male.	Female.	Total.		Male.		Female.	
				1914	1909	1914	1909	1914	1909
All classes	37.0	40.6	24.9	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials	3.0	2.7	.....	2.9	3.9	3.6	5.0	0.3	0.3
Proprietors and firm members	−16.2	−16.6	.....	0.2	0.4	0.3	0.5	[2]	[2]
Salaried officers of corporations	16.8	15.3	.....	0.8	0.9	1.0	1.2	0.1	0.1
Superintendents and managers	1.0	1.1	.....	1.9	2.5	2.3	3.2	0.1	0.2
Clerks and other subordinate salaried employees	57.4	56.5	59.9	15.5	13.5	14.2	12.8	20.2	15.8
Wage earners (average number)	35.3	40.4	18.4	81.6	82.6	82.1	82.3	79.5	83.9
16 years of age and over	35.8	40.8	18.6	81.1	81.9	81.8	81.6	78.5	82.7
Under 16 years of age	−11.1	−17.9	0.7	0.5	0.8	0.4	0.6	1.0	1.2

[1] A minus sign (−) denotes decrease; percentages are omitted where base is less than 100.

[2] Less than one-tenth of 1 per cent.

In order to compare the distribution of the persons engaged in the industry in 1914 and 1909 according to occupational status with that in 1904, it is necessary to use the classification employed at the earlier census. Such a comparison is made in Table 5. During the decade the ratio of increase in salaried employees exceeded that of any other classes for which figures are given in Table 5.

Table 5

CLASS.	PERSONS ENGAGED IN THE INDUSTRY.							
	Number.			Per cent distribution.			Per cent of increase.[1]	
	1914	1909	1904	1914	1909	1904	1909–1914	1904–1909
Total	144,712	105,600	71,485	100.0	100.0	100.0	37.0	47.7
Proprietors and firm members	368	439	400	0.2	0.4	0.6	−16.2	9.8
Salaried employees	26,266	17,905	10,619	18.2	17.0	14.9	46.7	68.6
Wage earners (average)	118,078	87,256	60,466	81.6	82.6	84.6	35.3	44.3

[1] A minus sign (−) denotes decrease.

Table 6 shows, for 1914, 1909, and 1904, the average number and per cent distribution of wage earners classified according to age periods, and in the case of those 16 years of age and over, according to sex.

Table 6

	AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY.					
	1914		1909		1904	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total	118,078	100.0	87,256	100.0	60,466	100.0
16 years of age and over	117,364	99.4	86,453	99.1	59,878	99.0
Male	93,836	79.5	66,622	76.4	48,976	81.0
Female	23,528	19.9	19,831	22.7	10,902	18.0
Under 16 years of age	714	0.6	803	0.9	588	1.0

Comparative statistics for the three census periods indicate the continuation of a tendency manifested

at the earlier census, and modify the deductions made from Table 4 with regard to the relative proportion of adult male and female wage earners, due to the unusual increase in the number of women and children reported for 1909. Table 6 indicates a higher ratio of increase as well as an increased proportion in the number of female than of male wage earners 16 years of age and over during the decade 1904–1914. Wage earners under 16 years of age have never been employed to any extent in the electrical industry and during the decade, in which the average number of wage earners nearly doubled, the proportion formed by this class has steadily diminished, until in 1914 it amounted to only six-tenths of 1 per cent of the total average number.

Wage earners employed, by months.—The following table gives for the industry the total number of wage earners employed on the 15th of each month, or nearest representative day, for 1914 and 1909, and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

The largest number of wage earners employed during any month of 1914 was 128,766 in January. The number decreased month by month, the smallest number, 107,277, being reported for December, and equal to 83.3 per cent of the maximum number. The reverse of this condition is shown for 1909, when the minimum number (77,444) was reported for January and the employment increased monthly, the maximum number (99,239) being reported for November. The variation in the number employed was greater in 1909 than in 1914, the minimum number forming 78 and 83.3 per cent, respectively, for the two years, of the maximum.

Table 7

MONTH.	WAGE EARNERS IN THE INDUSTRY. Number.[1]			Per cent of maximum.		
	1914	1909	1904	1914	1904	1904
January	128,766	77,444	62,181	100.0	78.0	100.0
February	126,610	79,193	60,971	98.3	79.8	98.1
March	126,240	80,779	60,714	98.0	81.4	97.6
April	123,742	81,699	60,633	96.1	82.3	97.5
May	120,956	83,229	60,092	93.9	83.9	96.6
June	118,743	85,117	60,025	92.2	85.8	96.5
July	116,340	86,080	59,664	90.3	86.7	96.0
August	115,347	88,133	59,265	89.6	88.8	95.3
September	113,768	91,822	59,434	88.4	92.5	95.6
October	110,944	95,496	60,289	86.2	96.2	97.0
November	108,203	99,239	60,998	84.0	100.0	98.1
December	107,277	98,868	61,326	83.3	99.6	98.6

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, for the nearest representative day; those for 1904, the average number employed during the month.

Table 8 gives the total average number of wage earners employed together with the total number employed on the 15th day of each month, or nearest representative day, for each state in which the average number of wage earners was 500 or more in 1914.

Table 8

WAGE EARNERS: 1914.
[Month of maximum employment for each state is indicated by **boldface** figures and that of minimum by *italic* figures.]

STATE.	Average number employed during year.	Number employed on 15th day of the month or nearest representative day.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States	118,078	**128,766**	126,610	126,240	123,742	120,956	118,743	116,340	115,347	113,768	110,944	108,203	*107,277*	83.3
California	780	*671*	730	799	818	887	879	866	814	760	716	709	711	75.6
Connecticut	5,059	5,015	5,294	**5,407**	5,220	5,094	5,070	4,983	4,914	*4,873*	4,979	4,978	4,881	90.1
Illinois	16,483	**18,186**	18,133	17,780	17,350	17,025	16,751	16,419	16,194	15,969	15,415	14,556	*14,018*	77.1
Indiana	4,075	4,802	**4,829**	4,786	4,597	4,405	4,195	4,016	3,757	3,674	3,318	3,268	*3,253*	67.4
Massachusetts	17,125	**18,644**	18,203	18,460	18,110	17,855	17,567	17,060	16,845	16,602	15,799	15,229	*15,126*	81.1
Michigan	1,144	1,192	1,149	1,158	1,216	**1,252**	1,185	1,164	1,108	*1,026*	1,046	1,105	1,127	81.9
Missouri	2,560	**2,856**	2,740	2,729	2,705	2,648	2,566	2,662	2,540	2,320	2,382	2,298	*2,274*	79.6
New Jersey	14,405	**16,208**	15,736	15,634	15,327	14,990	14,603	14,082	13,417	13,156	*13,009*	13,204	13,494	80.3
New York	23,738	**26,326**	25,859	25,551	24,903	24,217	23,445	23,141	22,720	22,677	*22,035*	22,058	21,924	83.7
Ohio	12,695	13,819	13,040	13,175	13,081	12,602	12,737	12,357	12 587	12,379	12,571	12,104	*11,888*	86.0
Pennsylvania	14,866	15,349	15,205	15,208	15,075	14,753	14,639	14,614	15,458	15 482	14,889	13,907	*13,813*	89.2
Rhode Island	1,581	1,845	1,796	1,809	1,671	1,622	1,548	1,529	1.549	1,464	1,406	1,368	*1,365*	74.0
Wisconsin	2,115	2,307	**2,332**	2,209	2,189	2,127	2,085	2,046	2,061	*1,987*	1,995	2,027	2,015	85.2

The same degree of constancy of employment shown by the total for the United States did not prevail in all of the states. The greatest variation in employment is shown for Indiana, where the minimum number formed 67.4 per cent of the maximum. The greatest regularity in the number is shown for Connecticut, where the minimum formed 90.1 per cent of the maximum. In 7 of the 13 states shown in the table the month of maximum employment was January, and in 7 states the month of minimum employment was December.

The months of maximum and minimum employment for 1914 and the number of wage earners reported for such months are given for all states for which separate statistics are presented in Table 32.

Prevailing hours of labor.—In Table 9 the average number of wage earners reported for 1914 and 1909 for the industry has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment was classified as a total, even though a few employees worked a greater or less number of hours.

starter-generator sets. Alternating-current machines to the number of 2,512, of 1,188,005 kilowatts, and valued at $7,437,445, were reported in 1914, a decrease in number and value of 13.6 per cent and 11.1 per cent, respectively, but an increase of 19.8 per cent in capacity, as compared with 1909.

The average capacity of dynamos of the alternating-current type in 1914 was twelve and one-half times that of direct-current dynamos (other than those used for automobile starting and lighting) at less than half the average cost per kilowatt.

There were 639 generators for direct connection to steam turbines manufactured in 1914, of 615,101 kilowatts, in the aggregate, valued at $4,293,670. These represent 43.6 per cent of the capacity of all dynamos, other than the group of small machines (for which capacity was not reported). The alternating machines are of course in preponderance, the direct-current machines constituting but 2.4 per cent of the kilowatt capacity of the generators of the steam-turbine class, and averaging but 56.5 kilowatts per machine, while the alternating-current machines average 1,600 kilowatts. The figures for dynamotors and machines of an allied character may not be strictly comparable as reported for the different censuses as some types may have been included by manufacturers at the last census that were otherwise reported at the earlier censuses. The figures for 1914 indicate an increase of 164.3 per cent in kilowatts and 70.2 per cent in value over 1909.

Transformers.—Table 19 shows the statistics for transformers for 1914, 1909, 1904, and 1899.

Table 19

CLASS.	Census year.	TRANSFORMERS. Number.	Kilowatts.	Value.
All classes	1914	115,843	2,644,794	$13,120,065
	1909	76,729	1,635,429	8,801,019
	1904	66,698	728,181	4,468,587
	1899	36,513	305,588	[1] 2,962,871
Under 50 kilowatts	1914	110,177	762,707	7,316,615
50 kilowatts and over	1914	5,666	1,882,087	5,803,450
50 to 500 kilowatts	1914	4,857	544,443	2,625,414
500 kilowatts and over	1914	809	1,337,644	3,178,036
Under 50 kilowatts	1909	72,776	577,408	4,184,832
50 kilowatts and over	1909	3,953	1,058,021	4,616,187
Under 50 kilowatts	1904	63,311	350,174	3,292,207
50 kilowatts and over	1904	3,387	378,007	1,176,360

[1] Includes transformers to the value of $2,700 for which number and capacity were not reported.

The increase in the manufacture of transformers in 1914, as compared with 1909, amounted to 51 per cent in number, 61.7 per cent in capacity, and 49.1 per cent in value. The greatest increases in the number and value during this period occurred in the machines of the smaller type, under 50 kilowatt capacity, while 81.6 per cent of the total increase in capacity was reported for transformers of the larger types, 50 kilowatts and over. Transformers under 50 kilowatt capacity increased 51.4 per cent in number, 32.1 per cent in capacity, and 74.8 per cent in value, and were of less average capacity and higher cost per kilowatt in 1914 than in 1909.

The transformers of the larger type apparently became larger and relatively cheaper, the increase for the five years 1909–1914 being 43.3 per cent in number, 77.9 per cent in kilowatts, and only 25.7 per cent in value. At the census of 1914 an effort was made to procure more detailed statistics relating to this class of apparatus, and 809 transformers were reported of 500 kilowatts and over, aggregating in capacity 1,337,644 kilowatts, and valued at $3,178,036, for which no comparable figures for 1909 are available.

Statistics were also collected for the number, capacity, and value of feeder-potential regulators, and reactances for 1914, but as these can not be shown separately, their value has been merged with that of rheostats, resistances, controllers, and motor-starting and speed-controlling devices, with a combined value of $9,543,224, as shown in Table 16. Of this group only rheostats and resistances were reported separately in 1909. Their value was $2,674,963. Generator-voltage regulators were reported to the value of $245,154 for 1914, and vibrating commutators, electric valves, mercury rectifiers, and rotating commutators to the value of $147,965.

Switchboards.—Each system of centralized electrical supply depends upon a switchboard for the manipulation of its circuits and to connect the sources of supply with the consumer. Table 20 shows the value of the switchboards, panel boards, and cut-out cabinets manufactured during 1914, 1909, 1904, and 1899, in 10 of the leading states for which comparable figures are available. New York contributed 61.2 per cent of the entire output in 1914.

Table 20

State.	SWITCHBOARDS, PANEL BOARDS, CUT-OUT CABINETS FOR LIGHT AND POWER, VALUE. 1914	1909	1904	1899
United States	$8,989,111	$5,971,804	$3,766,044	$1,846,624
California	130,162	90,594	27,749	10,000
Connecticut	224,481	151,385	(1)	3,700
Illinois	419,931	448,185	244,590	75,367
Indiana	229,989	117,877	12,700	(1)
Massachusetts	157,961	304,502	468,689	230,602
Minnesota	71,971	48,385	46,250	(1)
New Jersey	122,762	(1)	(1)	(1)
New York	5,505,685	2,789,297	1,373,366	1,055,288
Ohio	237,916	236,930	54,056	21,660
Pennsylvania	1,566,433	1,243,356	1,157,027	353,043
All other states	321,820	541,293	381,617	96,964

[1] Included in "all other states."

Motors.—Table 21 shows the number, capacity, and value of electric motors manufactured in 1914, 1909, 1904, and 1899.

The value of the motors, including parts and supplies, 1914, is an increase of $12,088,753, or 37.7 per cent, over the corresponding figure for 1909. The output of motors for power and railway use in 1914 exceeded that of 1909 by 160,769 in number, or an increase of 62.5 per cent; by 472,435 horsepower in rated capacity, or 19.6 per cent, and by $7,681,211 in

Table 11

STATE.	NUMBER OF ESTABLISHMENTS OWNED BY—			AVERAGE NUMBER OF WAGE EARNERS.						VALUE OF PRODUCTS.		
				Total.	In establishments owned by—			Per cent of total.			Total.	Of establishments owned by—	
	Individuals.	Corporations.	All others.		Individuals.	Corporations.	All others.	Individuals.	Corporations.	All others.		Individuals.	Corporations.
United States:													
1914	196	753	81	118,078	2,240	115,085	753	1.9	97.5	0.6	$335,170,194	$6,469,529	$326,501,635
1909	178	720	111	87,256	1,692	84,397	1,167	2.0	96.7	1.3	221,308,563	4,808,980	213,088,053
California	7	20	2	780	[1] 35	745	.....	[1] 4.5	95.5	.....	2,861,053	[1] 104,696	2,756,957
Connecticut	5	38	.....	5,059	23	5,036	.....	0.5	99.5	.....	14,330,156	125,908	14,204,248
Illinois	27	103	12	16,483	125	16,286	72	0.8	98.8	0.4	45,667,456	265,105	45,171,971
Indiana	4	35	2	4,075	[1] 22	4,053	.....	[1] 0.5	99.5	.....	8,879,178	[1] 51,158	8,828,020
Massachusetts	20	67	4	17,125	260	16,812	53	1.5	98.2	0.3	43,869,294	793,483	42,937,503
Michigan	7	26	2	1,144	[1] 50	1,094	.....	[1] 4.4	95.6	.....	3,415,500	[1] 99,993	3,315,507
Missouri	7	12	.....	2,560	321	2,239	.....	12.5	87.5	.....	6,643,210	359,782	6,283,428
New Jersey	12	58	6	14,405	169	14,144	92	1.2	98.2	0.6	40,740,810	615,547	39,706,778
New York	50	151	14	23,738	553	23,079	106	2.3	97.2	0.5	73,944,708	1,637,412	71,993,474
Ohio	20	87	12	12,695	88	12,482	125	0.7	98.3	1.0	36,120,978	257,038	35,520,772
Pennsylvania	16	73	16	14,866	480	14,233	153	3.2	95.8	1.0	44,395,789	1,958,552	42,071,501
Rhode Island	2	10	1	1,581	[1] 36	1,545	.....	[1] 2.3	97.7	.....	5,468,065	[1] 77,207	5,390,858
Wisconsin	4	24	1	2,115	[1] 14	2,101	.....	[1] 0.7	99.3	.....	5,396,802	[1] 52,264	5,344,538

STATE.	VALUE OF PRODUCTS—continued.				VALUE ADDED BY MANUFACTURE.					
	Of establishments owned by—continued.	Per cent of total.			Total.	Of establishments owned by—			Per cent of total.	
	All others.	Individuals.	Corporations.	All others.		Individuals.	Corporations.	All others.	Individuals.	Corporations.	All others.
United States:											
1914	$2,199,030	1.9	97.4	0.7	$180,442,118	$3,251,636	$176,021,621	$1,168,861	1.8	97.6	0.6
1909	3,411,521	2.2	96.3	1.5	112,742,159	2,577,833	108,307,076	1,857,250	2.3	96.1	1.6
California	.....	[1] 3.6	96.4	.....	1,301,395	[1] 60,404	1,240,991	.....	[1] 4.6	95.4	.....
Connecticut	.....	0.9	99.1	.....	6,894,026	42,025	6,852,001	.....	0.6	99.4	.....
Illinois	230,380	0.6	98.9	0.5	26,288,292	170,889	25,965,450	151,953	0.6	98.8	0.6
Indiana	.....	[1] 0.6	99.4	.....	4,948,531	[1] 31,239	4,917,292	.....	[1] 0.6	99.4	.....
Massachusetts	138,308	1.8	97.9	0.3	26,172,387	315,957	25,803,632	52,798	1.2	98.6	0.2
Michigan	.....	[1] 2.9	97.1	.....	1,675,952	[1] 57,356	1,618,596	.....	[1] 3.4	96.6	.....
Missouri	.....	5.4	94.6	.....	4,227,457	229,727	3,997,730	.....	5.4	94.6	.....
New Jersey	418,485	1.5	97.5	1.0	20,191,534	356,309	19,664,772	170,453	1.8	97.4	0.8
New York	316,822	2.2	97.4	0.4	35,919,949	1,033,110	34,691,928	194,911	2.9	96.6	0.5
Ohio	343,168	0.7	98.3	1.0	18,638,730	152,222	18,295,482	191,026	0.8	98.2	1.0
Pennsylvania	365,736	4.4	94.8	0.8	27,155,769	690,848	26,254,089	210,832	2.5	96.7	0.8
Rhode Island	.....	[1] 1.4	98.6	.....	1,674,995	[1] 42,733	1,632,262	.....	[1] 2.5	97.5	.....
Wisconsin	.....	[1] 1.0	99.0	.....	3,333,082	[1] 17,724	3,315,358	.....	[1] 0.5	99.5	.....

[1] Includes "all others."

Size of establishments.—The tendency of the industry to become concentrated in large establishments is indicated by the statistics given in Table 12.

Establishments with products valued at $1,000,000 and over were the only class which increased in every particular not only as to actual numbers and amounts but in the percentages which these formed of the totals for the industry.

Of the 1,030 establishments reported for 1914, 53 manufactured products valued at $1,000,000 or over. In 1909 there were 31 establishments of this class out of a total of 1,009; and in 1904, 22 out of 784. While such establishments represented but a comparatively small proportion of the total number at each census, they reported 67.5 per cent of the total value of products in 1914, 57.1 per cent in 1909, and 60.5 per cent in 1904.

The average value of products per establishment increased from $179,604 in 1904 to $219,335 in 1909, and to $325,408 in 1914, and the average value added by manufacture, as computed from the figures in Table 1, from $94,353 in 1904 to $111,737 in 1909, and to $175,186 in 1914.

Table 12

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	1,030	118,078	$335,170,194	$180,442,118
	1909	1,009	87,256	221,308,563	112,742,159
Less than $5,000	1914	156	204	440,280	254,658
	1909	150	256	395,175	234,883
$5,000 to $20,000	1914	249	1,329	2,785,685	1,715,664
	1909	287	1,473	3,209,873	1,924,861
$20,000 to $100,000	1914	292	5,867	14,211,891	7,951,750
	1909	309	6,474	14,715,392	8,456,335
$100,000 to $1,000,000	1914	280	33,223	91,529,234	49,290,339
	1909	232	28,108	76,612,783	41,436,270
$1,000,000 and over	1914	53	77,455	226,203,104	121,229,707
	1909	31	50,925	126,375,340	60,689,810
Per cent distribution:					
Less than $5,000	1914	15.1	0.2	0.1	0.1
	1909	14.9	0.3	0.2	0.2
$5,000 to $20,000	1914	24.2	1.1	0.8	1.0
	1909	28.4	1.7	1.5	1.7
$20,000 to $100,000	1914	28.4	5.0	4.2	4.4
	1909	30.6	7.4	6.6	7.5
$100,000 to $1,000,000	1914	27.2	28.1	27.3	27.3
	1909	23.0	32.2	34.6	36.8
$1,000,000 and over	1914	5.1	65.6	67.5	67.2
	1909	3.1	58.4	57.1	53.8

Table 13 shows the size of establishments in 1914 and 1909, as measured by the number of wage earners employed, for the industry as a whole, and for the 13 leading states.

Table 13

STATE.	Census year.	TOTAL.		ESTABLISHMENTS EMPLOYING—															
				No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.	
		Establishments.	Wage earners (average number).	Establishments.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States	1914	1,030	118,078	35	307	831	263	3,108	150	4,720	98	6,980	95	15,031	45	15,183	20	13,874	17	58,351
	1909	1,009	87,256	22	333	893	274	3,095	152	4,867	91	6,490	90	14,212	27	9,673	9	6,119	11	41,907
California[1]	1914	29	780	2	11	30	11	107	2	55	.....	.....	2	262	1	326	.....	.....	.....	.....
Connecticut	1914	43	5,059	1	11	38	6	75	3	101	2	131	15	2,589	4	1,210	1	915	.....	.....
	1909	41	3,505	1	11	39	5	53	5	158	4	339	13	1,975	1	371	1	570	.....	.....
Illinois	1914	142	16,483	5	46	122	39	491	23	693	12	802	12	1,716	2	740	1	612	2	11,307
	1909	143	9,641	5	55	145	42	469	17	529	14	966	6	699	1	437	1	665	2	5,731
Indiana	1914	41	4,075	2	9	32	10	105	7	246	6	358	4	585	1	460	1	967	1	1,322
	1909	42	3,073	.....	13	24	9	87	7	225	7	534	3	480	2	854	1	869	.....	.....
Massachusetts	1914	91	17,125	1	22	51	25	323	14	429	13	920	6	1,061	7	2,125	1	693	2	11,503
	1909	83	14,507	2	14	40	22	271	19	664	11	841	10	1,754	3	1,070	.....	.....	2	9,867
Michigan	1914	35	1,144	2	14	45	4	54	7	202	5	342	3	501	.....	.....	.....	.....	.....	.....
	1909	40	1,218	2	14	31	12	117	7	238	1	51	3	431	1	350	.....	.....	.....	.....
Missouri	1914	19	2,560	.....	8	22	4	47	2	57	.....	.....	.....	.....	4	1,329	.....	.....	1	1,105
	1909	20	1,060	.....	7	22	7	76	.....	.....	1	54	4	568	1	340	.....	.....	.....	.....
New Jersey	1914	76	14,405	2	15	36	13	140	11	343	9	688	11	1,789	7	2,780	5	3,405	3	5,224
	1909	69	11,099	.....	11	34	23	293	14	479	3	226	7	1,213	6	2,161	2	1,297	3	5,396
New York	1914	215	23,738	8	74	189	60	674	23	697	20	1,492	18	2,816	7	2,057	3	1,986	2	13,827
	1909	217	18,972	4	86	224	64	677	28	848	16	1,147	15	2,327	1	457	1	638	2	12,654
Ohio	1914	119	12,695	4	40	116	24	284	16	583	10	662	11	1,827	6	2,121	4	2,482	4	4,620
	1909	115	8,073	1	35	79	29	337	15	448	12	834	15	2,446	6	1,944	1	809	1	1,176
Pennsylvania	1914	105	14,866	2	28	83	33	403	15	437	11	877	9	1,281	4	1,354	1	988	2	9,443
	1909	84	11,025	4	20	59	24	293	14	444	10	678	8	1,294	2	637	1	537	1	7,063
Rhode Island	1914	13	1,581	1	2	5	2	18	4	117	.....	.....	1	225	2	681	1	535	.....	.....
	1909	12	1,601	.....	4	10	1	6	2	53	.....	.....	3	500	1	298	1	734	.....	.....
Wisconsin	1914	29	2,115	1	5	8	9	127	7	264	4	270	1	155	.....	.....	2	1,291	.....	.....
	1909	30	1,409	.....	13	41	7	79	5	189	2	124	1	222	2	754	.....	.....	.....	.....

[1] Less than 500 wage earners in 1909.

There were 35 establishments which reported no wage earners in 1914. These were small establishments in which the work was done by the proprietors or firm members. In some cases they employ one or two wage earners for short periods, but the number is so small and the period so short that in computing the average number, as described in the "Explanation of terms," no wage earners could be shown for the establishment. Of the remainder, 29.8 per cent employed from 1 to 5 wage earners; 25.5 per cent from 6 to 20; 24.1 per cent from 21 to 100; 13.6 per cent from 101 to 500; and only 3.6 per cent more than 500.

Of the total number of wage earners, 61.2 per cent worked in establishments employing over 500 each in 1914 and 55 per cent in 1909; the 17 establishments in 1914 and the 11 in 1909, in which more than 1,000 wage earners were employed, reported 49.4 per cent and 48 per cent, respectively, of the total number of wage earners. Establishments employing 501 to 1,000 wage earners embraced 11.7 per cent of all wage earners in 1914 and 7 per cent in 1909; those employing 101 to 500 wage earners, 25.6 per cent in 1914 and 27.4 per cent in 1909; those employing 21 to 100, 9.9 per cent in 1914 and 13 per cent in 1909; those employing 20 or less, 3.3 per cent in 1914 and 4.6 per cent in 1909. The proportionate growth is in the large plants, or those employing over 250 wage earners.

Expenses.—The census figures for expenses do not purport to show the total cost of manufacture, since they take no account of miscellaneous expense, particularly of interest or depreciation; hence they can not properly be used for determining profits. Facts of interest can be brought out, however, concerning the relative importace of the different classes of expenses which were reported.

Table 1 shows the total reported expenses in 1914 to have been $267,403,445, distributed as follows: Cost of materials $154,728,076, or 57.9 per cent; wages $73,806,329, or 27.6 per cent; salaries $35,291,281, or 13.2 per cent; rent and taxes $3,286,870, or 1.2 per cent; and contract work $290,889, or one-tenth of 1 per cent. In 1909 the corresponding percentages were materials 60.1; wages 27.4; salaries 11.2; and rent, taxes, and contract work 1.3; and in 1904, materials 60; wages 28.6; salaries 10; and rent, taxes, and contract work 1.4. Naturally there are variations in the states owing to differences in the class of products. The proportion which the cost of materials

forms of the total expenses reported ranged, among the six leading states in 1914, from 51.9 per cent in Illinois to 62.3 per cent in New York.

Engines and power.—Table 14 shows, for 1914, 1909, and 1904, for the industry, the number and total horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

Table 14

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	17,572	6,596	2,896	227,731	158,768	105,376	100.0	100.0	100.0
Owned	550	601	565	151,844	107,764	81,180	66.7	67.9	77.0
Steam engines and turbines [1]	350	410	395	142,085	99,897	77,059	62.4	62.9	73.1
Internal-combustion engines	181	166	111	8,694	6,753	2,940	3.8	4.3	2.8
Water wheels, turbines, and motors	19	25	59	1,065	1,114	1,181	0.5	0.7	1.1
Rented	17,022	5,995	2,331	75,887	51,004	24,196	33.3	32.1	23.0
Electric	17,022	5,995	2,331	74,476	50,045	21,313	32.7	31.5	20.2
Other				1,411	959	2,883	0.6	0.6	2.7
Electric	39,568	22,650	8,472	262,119	164,540	61,753	100.0	100.0	100.0
Rented	17,022	5,995	2,331	74,476	50,045	21,313	28.4	30.4	34.5
Generated by establishments reporting	22,546	16,655	6,141	187,643	114,495	40,440	71.6	69.6	65.5

[1] Figures for horsepower include for 1909 and 1904 the amounts reported under the head of "other" owned power.

The total primary power increased from 105,376 horsepower in 1904 to 227,731 horsepower in 1914, or 116.1 per cent for the decade. Steam engines still supply the greater part of the primary power, although such power represented a smaller proportion of the total primary power in 1914 than in 1904. Some part of this proportionate decrease is due to the large increase in rented electric power.

The horsepower of electric motors used for distributing power increased from 40,440 in 1904 to 187,643 in 1914. The electric power as given in these tables is the total of electric motor installations in the various establishments, whether run with purchased or generated current; and because of the modern practice of direct drive instead of shaft drive, their capacity in the aggregate exceeds that of the primary power in many cases.

Fuel consumed.—Table 15 shows, for 1914, the quantity of each kind of fuel used, for which data were obtained, for the industry as a whole and for 13 separate states.

Bituminous coal was the principal fuel used. Gas and oil were also used to a considerable extent, the largest quantity of the former being reported from Ohio and of the latter for New York.

Table 15

STATE.	COAL.		Coke, (tons, 2,000 lbs.).	Oil, including gasoline (barrels).	Gas (1,000 cubic feet).
	Anthracite (tons, 2,240 lbs.).	Bituminous (tons, 2,000 lbs.)			
United States	66,841	769,260	26,378	125,523	2,767,856
California		60	3	5,402	3,329
Connecticut	3,074	24,686	27	398	16,103
Illinois	159	79,135	6,319	4,970	326,637
Indiana	1,136	24,515	6,000	3,473	7,984
Massachusetts	1,496	117,165	4,407	18,402	50,431
Michigan	15	3,974	306	559	6,771
Missouri	4	8,799	30	951	19,261
New Jersey	29,592	44,084	50	2,930	107,306
New York	21,362	251,332	3,880	51,168	142,082
Ohio	81	59,496	1,257	5,407	1,094,338
Pennsylvania	3,155	122,889	2,913	26,768	433,817
Rhode Island	6,612	12,189	54	4,207	19,426
Wisconsin	50	17,156	1,095	628	98,403

SPECIAL STATISTICS RELATING TO PRODUCTS.

The foregoing tables give the general statistics for establishments engaged primarily in the manufacture of electrical machinery, apparatus, and supplies. There is, however, a considerable production of such commodities by establishments engaged primarily in other lines of manufacture, and the general statistics for them are included with those for other branches of industry. In the following tables pertaining to products the total production is given, including that made as a subsidiary product in establishments classed under other industries.

Table 16 summarizes the statistics, for 1914, 1909, 1904, and 1899, relative to the different kinds or groups of electrical machinery, apparatus, and supplies, for which separate totals were compiled at the census of 1914.

The statistics given in Table 16 do not include porcelain electrical supplies manufactured in the clay-working industries, reported by the United States Geological Survey, to the value of $4,130,270 for 1914, nor the value of 10,461,843 dozen globes and 79,211 gross of battery jars accredited to the glass industry.

In comparing statistics at the different censuses allowance should be made, particularly in the case of some of the less distinctive products, for changes in the schedule of inquiry used, and for the fact that it

is possible that all manufacturers did not classify their products in the same way. It is highly probable that many articles specifically called for were not reported separately, and are included in the item "all other electrical machinery, apparatus, and supplies."

Table 16

	1914	1909	1904	1899
Products, total value	$359,432,155	$240,037,479	$159,551,402	$105,831,865
The electrical industry—Electrical machinery, apparatus, and supplies	335,170,194	221,308,563	140,809,369	92,434,435
Subsidiary electrical products of other industries	24,261,961	18,728,916	18,742,033	13,397,430
Dynamos	23,233,437	17,231,804	12,824,768	10,852,323
Transformers	13,120,065	8,801,019	4,408,567	2,962,871
Rheostats, resistances, controllers, motor-starting and speed-controlling devices, feeder-potential regulators, and reactances	9,543,224	[1] 2,674,963	[1] 932,925	[2] 1,186,878
Generator-voltage regulators	245,154	[3]	[3]	[3]
Rectifying apparatus, including rotating commutators, electric valves, mercury rectifiers, and vibrating commutators	147,965	[3]	[3]	[3]
Switchboards, panel boards, and cut-out cabinets for light and power	8,989,111	5,971,804	3,766,044	1,846,624
Motors	44,176,235	32,087,482	22,370,626	19,505,504
Batteries	23,402,455	10,612,470	4,243,393	3,679,045
Storage	13,080,964	4,678,209	2,645,749	2,559,601
Primary	10,321,491	5,934,261	1,598,144	1,119,444
Carbons—Furnace lighting, brushes, battery, and miscellaneous	3,602,741	1,934,864	2,710,935	1,731,248
Arc lamps	742,142	1,706,959	1,574,422	1,827,771
Searchlights, projectors, and focusing lamps	2,081,545	935,874	114,795	225,635
Incandescent lamps	17,350,385	15,714,809	6,953,205	3,515,118
Sockets, receptacles, bases, etc.	5,512,609	4,521,729	2,010,860	593,929
Electric-lighting fixtures [4]	3,383,955	2,200,668	3,294,606	3,750,670
Telegraph apparatus	2,248,375	1,957,432	1,111,194	1,642,266
Telephone apparatus	22,815,640	14,259,357	15,863,698	10,512,412
Insulated wire and cables	69,505,573	51,624,737	34,519,699	21,292,001
Electric heating, cooking, and welding apparatus, including flatirons	4,048,915	1,954,112	395,827	[3]
Electric measuring instruments	8,786,506	7,800,010	5,004,763	1,842,135
Electric locomotives, mine and railway	[5] 3,720,914	[3]	[3]	[3]
Electrical therapeutic apparatus	2,653,098	1,107,858	1,036,962	[3]
Magnetoignition apparatus, spark plugs, coils, etc.	22,260,847	6,092,343	678,077	[3]
Electric switches, signals, and attachments	6,393,551	5,377,843	1,451,337	1,129,891
Annunciators	263,806	235,567	185,870	224,885
Electric clocks and time mechanisms	410,774	352,513	373,926	132,149
Electric conduits, underground and interior	4,874,709	5,098,264	2,416,245	1,066,163
Lightning arresters	1,188,773	940,171	587,124	595,497
Fuses	1,757,430	1,001,719	868,079	
Circuit fittings of all kinds	2,067,683	1,080,287	3,525,446	[3]
All other electrical machinery, apparatus, and supplies	27,276,294	18,995,176	26,267,509	15,716,850
All other products, including amount received for custom work and repairing	23,628,244	17,765,645		

[1] Rheostats and resistances only.
[2] Rheostats and resistances, and heating and welding apparatus.
[3] Figures not available.
[4] Not including fixtures made by establishments engaged primarily in the manufacture of "gas and electric fixtures."
[5] Number, 900.

The more important classes of products are treated separately in tables presenting statistics of production in detail.

Table 17 shows, for 1914 and 1909, the value of the various kinds of electrical apparatus included in the totals shown in Table 16, which were manufactured by establishments in other industries as subsidiary products.

Table 17

KIND.	SUBSIDIARY ELECTRICAL PRODUCTS (ESTABLISHMENTS INCLUDED UNDER OTHER INDUSTRY CLASSIFICATIONS).	
	1914	1909
Number of establishments	91	142
Total value	$24,261,961	$18,728,916
Dynamos and dynamo parts and supplies	1,668,523	2,111,542
Switchboards for light and power	98,098	224,452
Motors and parts and supplies	900,683	1,213,761
Insulated wires and cables	18,183,964	11,374,165
Magneto-ignition apparatus, spark-plugs, coils, etc.	105,541	79,185
Electric locomotives	847,370	
Other electrical machinery, apparatus, and supplies	2,321,255	3,691,453
Custom work and repairing	136,527	34,360

Dynamos.—The statistics with regard to dynamos are shown in Table 18.

Table 18

CLASS.	DYNAMOS, PARTS AND SUPPLIES.			
	1914	1909	1904	1899
Total value	$23,233,437	$17,231,804	$12,824,768	$10,852,323
Alternating current:				
Dynamos—				
Number	2,137			
Kilowatts	587,820			
Value	$3,542,154	2,909	1,324	1,345
Generators for direct connection to steam turbines—		991,728	355,532	296,673
Number	375	$8,370,524	$4,111,104	$4,174,651
Kilowatts	600,185			
Value	$3,895,291			
Direct current:				
Dynamos not elsewhere specified—				
Number	9,369			
Kilowatts	206,305			
Value	$2,569,086			
Generators for direct connection to steam turbines—				
Number	264	13,882	13,756	9,182
Kilowatts	14,916	414,222	640,350	321,451
Value	$398,379	$4,710,524	$6,973,130	$6,297,925
Small dynamos and automobile starter-generator sets [1]—				
Number	208,545			
Value	$5,933,273			
Dynamotors, motor generators, boosters, rotary converters, double-current generators, synchronous condensers, and rotary-phase converters:				
Number	8,393	2,291	2,135	649
Kilowatts	780,009	295,079	209,664	19,798
Value	$5,367,895	$3,154,733	$1,740,534	$379,747
Parts and supplies, value	$1,527,359	$996,023	[2]	[2]

[1] Figures for capacity not available; fraction of kilowatt.
[2] Figures not available.

Dynamotors and machines of an allied character are included in the dynamo group, though they may be classed as transformers. The group also includes a large number of small dynamos of a fraction of a kilowatt capacity and starter-generator sets for automobiles. With respect to the latter, it does not include those made and installed by the automobile manufacturers. The growth in direct-current dynamos has been chiefly confined to the small units. In the aggregate their value, $8,900,738, is a large increase over each of the prior years, but two-thirds of this value is represented by the small dynamos and

starter-generator sets. Alternating-current machines to the number of 2,512, of 1,188,005 kilowatts, and valued at $7,437,445, were reported in 1914, a decrease in number and value of 13.6 per cent and 11.1 per cent, respectively, but an increase of 19.8 per cent in capacity, as compared with 1909.

The average capacity of dynamos of the alternating-current type in 1914 was twelve and one-half times that of direct-current dynamos (other than those used for automobile starting and lighting) at less than half the average cost per kilowatt.

There were 639 generators for direct connection to steam turbines manufactured in 1914, of 615,101 kilowatts, in the aggregate, valued at $4,293,670. These represent 43.6 per cent of the capacity of all dynamos, other than the group of small machines (for which capacity was not reported). The alternating machines are of course in preponderance, the direct-current machines constituting but 2.4 per cent of the kilowatt capacity of the generators of the steam-turbine class, and averaging but 56.5 kilowatts per machine, while the alternating-current machines average 1,600 kilowatts. The figures for dynamotors and machines of an allied character may not be strictly comparable as reported for the different censuses as some types may have been included by manufacturers at the last census that were otherwise reported at the earlier censuses. The figures for 1914 indicate an increase of 164.3 per cent in kilowatts and 70.2 per cent in value over 1909.

Transformers.—Table 19 shows the statistics for transformers for 1914, 1909, 1904, and 1899.

Table 19

CLASS.	Census year.	TRANSFORMERS. Number.	Kilowatts.	Value.
All classes	1914	115,843	2,644,794	$13,120,065
	1909	76,729	1,635,429	8,801,019
	1904	66,698	728,181	4,468,587
	1899	36,513	305,588	[1] 2,962,871
Under 50 kilowatts	1914	110,177	762,707	7,316,615
50 kilowatts and over	1914	5,666	1,882,087	5,803,450
50 to 500 kilowatts	1914	4,857	544,443	2,625,414
500 kilowatts and over	1914	809	1,337,644	3,178,036
Under 50 kilowatts	1909	72,776	577,408	4,184,832
50 kilowatts and over	1909	3,953	1,058,021	4,616,187
Under 50 kilowatts	1904	63,311	350,174	3,292,207
50 kilowatts and over	1904	3,387	378,007	1,176,360

[1] Includes transformers to the value of $2,700 for which number and capacity were not reported.

The increase in the manufacture of transformers in 1914, as compared with 1909, amounted to 51 per cent in number, 61.7 per cent in capacity, and 49.1 per cent in value. The greatest increases in the number and value during this period occurred in the machines of the smaller type, under 50 kilowatt capacity, while 81.6 per cent of the total increase in capacity was reported for transformers of the larger types, 50 kilowatts and over. Transformers under 50 kilowatt capacity increased 51.4 per cent in number, 32.1 per cent in capacity, and 74.8 per cent in value, and were of less average capacity and higher cost per kilowatt in 1914 than in 1909.

The transformers of the larger type apparently became larger and relatively cheaper, the increase for the five years 1909–1914 being 43.3 per cent in number, 77.9 per cent in kilowatts, and only 25.7 per cent in value. At the census of 1914 an effort was made to procure more detailed statistics relating to this class of apparatus, and 809 transformers were reported of 500 kilowatts and over, aggregating in capacity 1,337,644 kilowatts, and valued at $3,178,036, for which no comparable figures for 1909 are available.

Statistics were also collected for the number, capacity, and value of feeder-potential regulators, and reactances for 1914, but as these can not be shown separately, their value has been merged with that of rheostats, resistances, controllers, and motor-starting and speed-controlling devices, with a combined value of $9,543,224, as shown in Table 16. Of this group only rheostats and resistances were reported separately in 1909. Their value was $2,674,963. Generator-voltage regulators were reported to the value of $245,154 for 1914, and vibrating commutators, electric valves, mercury rectifiers, and rotating commutators to the value of $147,965.

Switchboards.—Each system of centralized electrical supply depends upon a switchboard for the manipulation of its circuits and to connect the sources of supply with the consumer. Table 20 shows the value of the switchboards, panel boards, and cut-out cabinets manufactured during 1914, 1909, 1904, and 1899, in 10 of the leading states for which comparable figures are available. New York contributed 61.2 per cent of the entire output in 1914.

Table 20

State.	SWITCHBOARDS, PANEL BOARDS, CUT-OUT CABINETS FOR LIGHT AND POWER, VALUE. 1914	1909	1904	1899
United States	$8,989,111	$5,971,804	$3,766,044	$1,846,624
California	130,162	90,594	27,749	10,000
Connecticut	224,481	151,385	(1)	3,700
Illinois	419,931	448,185	244,590	75,367
Indiana	229,989	117,877	12,700	(1)
Massachusetts	157,961	304,502	468,689	230,602
Minnesota	71,971	48,385	46,250	(1)
New Jersey	122,762	(1)	(1)	(1)
New York	5,505,685	2,789,297	1,373,366	1,055,288
Ohio	237,916	236,930	54,056	21,660
Pennsylvania	1,566,433	1,243,356	1,157,027	353,043
All other states	321,820	541,293	381,617	96,964

[1] Included in "all other states."

Motors.—Table 21 shows the number, capacity, and value of electric motors manufactured in 1914, 1909, 1904, and 1899.

The value of the motors, including parts and supplies, 1914, is an increase of $12,088,753, or 37.7 per cent, over the corresponding figure for 1909. The output of motors for power and railway use in 1914 exceeded that of 1909 by 160,769 in number, or an increase of 62.5 per cent; by 472,435 horsepower in rated capacity, or 19.6 per cent, and by $7,681,211 in

value, or 31.2 per cent. The large percentages of increase shown, however, are entirely owing to the preponderance of motors for industrial power. Railway motors (included with industrial motors, to avoid the disclosure of individual operations) increased in capacity less than 1 per cent.

Table 21

CLASS.	MOTORS, PARTS AND SUPPLIES.			
	1914	1909	1904	1899
Total value	$44,176,235	$32,087,482	$22,370,626	$19,505,504
For industrial power and railways:				
Number	417,992	257,223	92,175	50,888
Horsepower	2,882,795	2,410,360	1,302,091	1,182,374
Value	$32,286,149	$24,604,938	$18,070,743	$15,120,321
Alternating current—				
Number	284,500	(1)	(1)	(1)
Horsepower	1,901,975	(1)	(1)	(1)
Value	$18,969,660	(1)	(1)	(1)
Direct current—				
Number	133,492	(1)	(1)	(1)
Horsepower	980,820	(1)	(1)	(1)
Value	$13,316,489	(1)	(1)	(1)
For automobiles:				
Number	11,880	2,796	1,819	3,017
Horsepower	36,858	12,471	19,907	8,220
Value	$1,351,442	$294,152	$152,685	$192,030
For fans, value	$4,835,850	$2,450,739	$1,168,254	$1,055,369
For miscellaneous uses, value	$1,190,564	$1,942,874	$2,978,944	$3,137,784
Parts and supplies, value	$4,512,230	$2,794,779	(1)	(1)

[1] Figures not available.

The comparability of the figures for automobile motors are possibly affected by the inclusion of a considerable number of starting motors for gasoline automobiles, not reported separately as such. It is probable that in some cases manufacturers included these under the inquiry for motors for automobiles. According to the returns, 11,880 electric motors for automobiles, of 36,858 horsepower, and valued at $1,351,442, were produced by 10 establishments in 1914, as compared with 2,796, of 12,471 horsepower, and valued at $294,152, manufactured by 7 establishments in 1909.

Batteries.—Table 22 shows the production of storage and primary batteries, parts and supplies, for 1914, 1909, 1904, and 1899.

Table 22

CLASS.	BATTERIES, PARTS AND SUPPLIES.			
	1914	1909	1904	1899
Total value	$23,402,455	$10,612,470	$4,243,893	$3,679,045
Storage:				
Batteries, value	$10,615,150	$4,243,984	$1,569,371	$2,559,601
Weight of plates, pounds	41,079,047	23,119,331	16,113,072	(1)
Parts and supplies, value	$2,465,814	$434,225	$1,076,378	(1)
Primary:				
Dry—				
Number	71,092,438	33,988,881	4,888,361	1,946,688
Value	$8,719,164	$4,583,082	$513,026	$316,013
Liquid [2]—				
Number	306,351	344,650	1,734,801	708,077
Value	$802,525	$729,513	$515,530	[3]$571,370
Parts and supplies, value	$799,802	$621,666	$569,588	$232,061

[1] Figures not available.
[2] Includes a small number of testing batteries.
[3] Includes $1,500 for which number was not reported.

The value of this group of products in 1914 exceeded that of 1909 by $12,789,985, an increase of 120.5 per cent. The greatest gain was in storage batteries, which in value increased 150.1 per cent, and in weight of plates, 77.7 per cent, during the last census period.

New Jersey led all states in the production of storage batteries, followed by Pennsylvania, Ohio, and New York, in the order named.

The production of dry batteries increased 109.2 per cent in number and 90.2 per cent in value during the five-year period ending with 1914. The figures include a number of small batteries for flash lights. The production of dry batteries has been greatly stimulated by the demand for their use on automobiles and motor boats.

The output of liquid batteries in 1914 shows a decrease of 11.1 per cent in number and an increase of 10.1 per cent in value over the production of similar batteries in 1909. Included in this group are a few testing batteries.

The value of battery supplies and parts reported separately, increased in the aggregate from $1,055,891 in 1909 to $3,265,616 in 1914.

Carbons.—As shown in Table 16 the aggregate value of carbons of all kinds was $3,602,741 in 1914, as compared with $1,934,864 in 1909, an increase of $1,667,877, or 86.2 per cent, for the five years. The manufacture of lighting carbons has declined and the output of furnace carbons increased, so that in 1914 the value of the latter manufacture exceeded that of brushes, etc., while lighting carbons, the division of first importance in this industry in 1900, dropped to last place in 1914.

Arc lamps and searchlights.—Table 23 shows the number and value of arc lamps manufactured in 1914, 1909, 1904, and 1899.

Table 23

KIND.	ARC LAMPS.			
	1914	1909	1904	1899
Number	35,112	123,985	195,157	158,187
Luminous or metallic arcs	22,846	(1)	(1)	(1)
Flame arcs	4,631	(1)	(1)	(1)
Carbon arcs	7,635	(1)	(1)	(1)
Value	$742,142	$1,706,959	$1,574,422	$1,827,771
Luminous or metallic arcs	441,992	(1)	(1)	(1)
Flame arcs	153,433	(1)	(1)	(1)
Carbon arcs	146,717	(1)	(1)	(1)

[1] Not reported.

The production of arc lamps of all kinds in 1914 shows a decrease of 71.7 per cent in number and 56.5 per cent in value, as compared with the returns for 1909. Comparable statistics for the several kinds of lamps are not available, owing to the different form of inquiry used at the earlier censuses. The arc lamps shown in the table for 1909 comprised 5,004 "open" lamps, valued at $83,660, and 118,981 lamps of the "inclosed" type, valued at $1,623,299.

The value of searchlights, projectors, and focusing lamps shown in Table 16 was $2,081,545 in 1914, an increase of $1,145,671, or 122.4 per cent, over that of 1909.

Incandescent lamps.—The statistics for incandescent lamps, so far as available, are given in Table 24, for 1914, 1909, 1904, and 1899.

Table 24

KIND.	INCANDESCENT LAMPS.			
	1914	1909	1904	1899
Total value	$17,350,385	$15,714,809	$6,953,205	$3,515,118
Tungsten:				
Number	74,434,059	11,738,619	[1] 112,711,558	[1] 25,320,198
Value	$11,886,354	$6,241,133	$6,308,299	$3,442,183
Carbon filament:				
Number	14,092,055	55,038,378		
Value	$1,397,572	$6,157,066		
Gem, vacuum and vapor, nitrogen, glower, and tantalum	$2,363,730	$2,715,991	[2] $395,155	$72,935
Decorative and miniature lamps, X-ray bulbs, vacuum tubes, etc.	$1,702,729	$600,619	$249,751	

		16 c. p.	*Below 16 c. p.*	*Above 16 c. p.*
[1] As reported:	1904	83,333,285	19,779,834	9,598,439
	1899	21,191,131	2,906,817	1,222,250

[2] Vacuum and vapor and glower lamps.

Tungsten lamps formed 68.5 per cent of the value of all incandescent lamps manufactured in 1914 and 39.7 per cent in 1909, at which time they were first reported. Tantalum lamps were reported by 7 establishments at the census of 1909, but their manufacture had been practically discontinued in 1914. Tungsten lamps were reported by 20 establishments in 1909 and by 28 in 1914. The phenomenal increase in number of tungsten lamps manufactured was accompanied by a reduction in the average unit value from 53 cents per lamp in 1909 to 16 cents in 1914.

The increase in tungsten lamps has been accompanied by a decrease in lamps of the older carbon filament type. Forty-three establishments reported the manufacture of carbon filament lamps in 1909 and only 20 in 1914, the decrease being, for the five years, 74.4 per cent in number and 77.3 per cent in value.

Although the aggregate value of lamps of the gem, vacuum and vapor, nitrogen, glower and tantalum types in 1914 was 13 per cent less than in 1909, the gem lamps included in this group had actually increased by 127.1 per cent in number and 91.4 per cent in value. The decrease in the group is due to the decline of lamps of the tantalum and glower types, which had reached a considerable output in 1909.

Fixtures and fittings.—The manufacture of sockets, receptacles, bases, etc., for which figures are shown in Table 16, shows an increase in value of 21.9 per cent in 1914 over that reported for 1909.

Only electric-lighting fixtures made in connection with other electrical manufactures are included in the production reported in Table 16.

Electric fixtures constituted the product of chief value of 263 establishments classified as "gas and electric fixtures," with products valued at $15,468,275.

The following statement summarizes the production of electric fixtures by all classes of establishments, not including, however, combined gas and electric fixtures, except as the same were made by establishments engaged primarily in the manufacture of electric fixtures:

Total products, value	$19,873,883
Establishments engaged primarily in the manufacture of electric fixtures, all products	15,468,275
Electric fixtures, made by establishments engaged primarily in the manufacture of—	
Electrical machinery, apparatus, and supplies	3,383,955
Gas and combination fixtures	701,400
Other manufactures, principally hardware	320,253

Telegraph apparatus.—Table 25 shows the production of telegraph instruments and apparatus in 1914, 1909, 1904, and 1899.

Table 25

CLASS.	TELEGRAPH APPARATUS.			
	1914	1909	1904	1899
Total value	$2,248,375	$1,957,432	$1,111,194	$1,642,266
Police, fire, district, and miscellaneous	1,253,954	1,126,658	592,070	1,231,167
Wireless apparatus	672,575	448,262	114,050	(1)
Intelligence (key sounder, etc.)	201,956	197,669	187,744	354,212
Switchboards and telegraph parts and supplies	119,890	184,843	217,330	56,887

[1] Figures not available.

Of the several groups of products, wireless apparatus shows a substantial growth, an increase of 50 per cent in 1914 as compared with 1909. The figures do not represent the magnitude of the wireless installations, as they cover only the instruments and appliances turned out by the factories during the census years.

Telephone apparatus.—Table 26 shows the statistics for telephone apparatus for 1914, 1909, and 1904.

Table 26

CLASS.	TELEPHONE APPARATUS.		
	1914	1909	1904
Total value	$22,815,640	$14,259,357	$15,863,698
Substation instruments:			
Central battery—			
Number	641,082		
Value	$3,916,869		
Magneto—			
Number	216,879		
Value	$1,799,834		
Interior systems:			
Number	62,258	$10,137,534	$13,227,008
Value	$510,509		
Central switchboards	$12,079,337		
Manual	$11,076,615		
Central battery	$10,701,764		
Magneto	$374,851		
Automatic	$1,002,722		
Private branch exchange switchboards:			
Number	3,693	2,252	3,917
Value	$448,203	$369,915	$564,795
Parts and supplies, value	$4,060,888	$3,751,908	$2,071,895

The aggregate value of all telephone apparatus, parts, and supplies produced in 1914 shows an increase of $8,556,283, or 60 per cent, over that reported for 1909. It is difficult to analyze this increase in telephone apparatus of various types, owing to changes in the schedule used to collect the data at the different censuses.

Substation instruments, interior systems, and central switchboards, as reported in 1914, showed an

aggregate value of $18,306,549,. as compared with $10,137,534 in 1909, an increase of 80 per cent. These were reported at the censuses of 1909 and 1904 under different headings. By far the greatest increase is in central switchboards. In 1909 central switchboards only were called for and reported, to the value of $2,398,909.

Under "substation instruments" in 1914 central battery and magneto instruments were reported to the value of $5,716,703. In 1909 separately reported transmitters and receivers reached a combined value of $2,511,691, in addition to which 732,697 "complete sets of instruments" were reported, valued at $5,103,849.

In 1909 interior systems without instruments were reported to the value of $123,085, as compared with $510,509 in 1914. Private branch exchange switchboards show an increase of 64 per cent in number and 21.2 per cent in value for 1914 as compared with 1909.

Insulated wire and cables.—Table 27 shows the value of the production of insulated wire and cables, by states, for 1914, 1909, and 1904.

Table 27

STATE.	INSULATED WIRE AND CABLES.		
	1914	1909	1904
United States,[1] total value	$69,505,573	$51,624,737	$34,519,699
New York	19,178,327	9,485,282	10,911,897
New Jersey	15,038,971	13,945,425	8,234,885
Illinois	9,626,775	9,487,006	3,666,313
Massachusetts	6,799,411	2,194,474	1,001,522
Connecticut	6,206,803	4,205,509	2,156,369
Rhode Island	6,045,876	7,741,411	5,122,464
Pennsylvania	3,299,485	2,796,825	2,885,052
All other states	3,309,925	1,768,805	541,197

[1] Production in 1899, $21,292,001.

The value of insulated wire and cables constituted the largest single item for the industry, as presented in Table 16. It forms nearly one-fifth of the total value of products and shows an increase of 34.6 per cent over the value of like products in 1909. Of this total amount, $51,321,609 was produced by 64 establishments engaged primarily in electrical manufactures and $18,183,964 by 13 establishments in other industries.

New York, New Jersey, and Illinois were the leading states in this branch of the industry. The combined production of these three states amounted to 63.1 per cent of the total value of all insulated wire and cables manufactured in the United States in 1914, 63.8 per cent in 1909, and 66.1 per cent in 1904.

Electric heating.—Table 28 gives the statistics for electric heating apparatus, comprising heating, cooking, and welding devices, for 1914, 1909, and 1904.

In 1904, 15 establishments reported heating and welding apparatus to the value of $395,827. With the growing use of electric heaters, stoves, and cooking apparatus, flatirons, soldering, sealing, and branding devices, this branch of the industry increased to over $4,000,000 in 1914.

Table 28

CLASS.	ELECTRIC HEATING APPARATUS.		
	1914	1909	1904
Total value	$4,048,915	$1,954,112	$395,827
Air heaters, including those for cars	352,617	919,533	(1)
Stoves and ranges	671,413		
Miscellaneous cooking devices	1,327,183		
Flatirons	1,466,620	951,074	(1)
Welding apparatus (not including motor-generator sets)	231,082	83,505	(1)

[1] Not reported separately.

Electric air heaters and cooking devices increased from $919,533 in 1909 to $2,351,213 in 1914, or 155.7 per cent. This item for 1909 comprises electric heaters, including those for cars, to the value of $638,979, and cooking stoves, to the value of $280,554. Stoves and ranges were not reported separately in 1909 and no accurate comparison with the statistics for 1914 can be made, but it seems clear that the greatest increase during the last five-year period was in miscellaneous cooking devices, such as grills, chafing dishes, toasters, hot plates, percolators, etc. It is probable that a considerable product of miscellaneous heating (other than cooking) devices, heating pads and appliances, immersion heaters, electric curling irons, wavers, etc., was not reported separately for 1914, but merged with unclassified electrical machinery, apparatus, and supplies.

The value of the electric flatirons manufactured in 1914 is an increase of 54.2 per cent, as compared with that of 1909.

Electric welding not only effects the joining together of two pieces of the same metal, but permits the welding together of different metals. The process usually employed is to pass a heavy current at low voltage through the abutting ends of the pieces of metal to be welded, and bringing them to a welding temperature at the same time that they are being pressed together. Internal heat is developed at the point of juncture, and, since it is first produced in the interior of the welding parts, the interior of the joint is as efficiently united as the visible exterior. Apparatus for electric welding (not including motor-generator sets) was reported to the value of $231,082 for 1914, as compared with $83,505 for 1909, an increase of 176.7 per cent.

Electric measuring instruments.—Table 29 shows the value of electrical measuring instruments of various kinds for 1914, 1909, and 1904.

The statistics show an increase of 12.6 per cent for 1914 as compared with 1909. Of the total production for 1914, meters for consumers' circuits comprised 69.7 per cent; station apparatus, 18.1 per cent; and

instruments for testing and scientific purposes, 12.2 per cent.

Table 29

KIND.	ELECTRIC MEASURING INSTRUMENTS.		
	1914	1909	1904
Total value	$8,786,506	$7,800,010	$5,004,763
Meters for consumers' circuits	6,127,946	5,613,838	3,585,080
Station apparatus	1,585,500	1,639,202	418,998
Testing and scientific instruments	1,073,060	546,970	1,000,685

Miscellaneous electrical products.—Table 30 shows the production of magneto-ignition apparatus, spark plugs, coils, etc., by states, for 1914 and 1909.

Table 30

STATE.	MAGNETO-IGNITION APPARATUS, SPARK PLUGS, COILS, ETC., VALUE.		
	1914	1909	1904
United States	$22,260,847	$6,092,343	$678,077
Ohio	7,472,268	131,055	56,022
Massachusetts	4,404,489	830,093	156,670
Indiana	2,950,792	2,223,221	159,610
New Jersey	2,922,684	469,952	(1)
Connecticut	1,537,324	240,629	(1)
New York	1,205,494	1,483,735	224,739
Pennsylvania	538,762	(1)	(1)
Illinois	413,986	253,451	.....
Michigan	385,120	290,234	47,710
Wisconsin	202,130	63,606	.....
All other states	227,798	106,367	33,326

[1] Included in "all other states."

The manufacture of magneto-ignition apparatus was first reported separately in 1904. The growth of the gasoline automobile industry has stimulated the production which increased from less than $700,000 in 1904 to over $22,000,000 in 1914. It now forms one of the most important branches of electrical manufacture. The states are ranked in the table according to the value of products, Ohio leading with one-third of the total value.

The following classes of electrical products, for which statistics are not given in the foregoing detail tables, are shown separately in Table 16; switches, signals, and attachments; conduits (underground and interior); locomotives; therapeutic apparatus; circuit fittings; fuses, lightning arresters; clocks and time mechanisms, and annunciators.

The value of the production of switches, signals and attachments in 1914 was an increase of 18.9 per cent over that for 1909. The increase in the value of electric therapeutic apparatus was 139.5 per cent; circuit fittings, 91.4 per cent; electric fuses, 75.4 per cent; lightning arresters, 26.4 per cent; electric clocks and time mechanisms, 16.5 per cent; and annunciators, 12 per cent. The value of the production of electric locomotives (mine and railway) in 1914, $3,720,914, represents 900 in number.

The large amount reported as the value of unclassified electrical machinery, apparatus, and supplies, $27,276,294, includes a number of articles which could not be segregated from other apparatus. There is included a considerable production of insulating compounds and supplies, electric mining, ventilating, drilling, grinding, and hoisting machinery, electric sign flashers, vacuum cleaners, heating pads and appliances, burglar alarms, small transformers, and toy motors and generators, electric toys, novelties and specialties of all kinds, as well as a considerable value of supplies and parts for incandescent lamps.

The value of "all other products, including amount received for custom work and repairing" in Table 16 includes electrical custom work and repairing, to the value of $5,676,592 in 1914, and $5,692,543 in 1909. This embraces the making of special electrical apparatus to order, as well as repairing electrical machinery, rewinding armatures, etc. The remaining $17,951,652 for 1914, and $12,073,102 for 1909 represent commodities not electrical in their nature, of which the most important are wire and foundry and machine-shop products.

DETAIL STATE TABLES.

The principal statistics secured by the census inquiry concerning establishments engaged in the manufacture of electrical machinery, apparatus, and supplies, are presented in Tables 31 and 32. Table 31 shows, for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products as reported for the industry.

Table 32 presents, for 1914, by states, the more detailed statistics of the industry.

TABLE 31.—COMPARATIVE SUMMARY, BY STATES, FOR 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	1,030	118,078	227,731	$73,806	$154,728	$335,170
	1909	1,009	87,256	158,768	49,381	108,566	221,309
	1904	784	60,466	105,376	31,842	66,837	140,809
California	1914	29	780	1,116	472	1,560	2,862
	1909	27	435	442	240	928	1,613
	1904	24	403	278	244	434	1,004
Connecticut	1914	43	5,059	6,459	2,630	7,436	14,330
	1909	41	3,505	4,457	1,603	5,211	9,824
	1904	32	1,707	2,505	724	2,754	4,940
Illinois	1914	142	16,483	21,140	12,366	19,379	45,667
	1909	143	9,641	11,636	6,413	13,628	26,826
	1904	104	6,131	6,253	3,203	7,649	16,700
Indiana	1914	41	4,075	6,426	2,423	3,931	8,879
	1909	42	3,073	5,285	1,361	3,693	7,718
	1904	34	1,416	3,042	664	1,067	2,857
Iowa	1914	5	94	88	58	87	235
	1909	9	64	84	31	74	200
Maryland	1914	6	66	80	35	40	121
	1909	7	121	266	41	54	147
	1904	6	161	329	66	93	225
Massachusetts	1914	91	17,125	29,846	10,651	17,697	43,869
	1909	83	14,507	14,835	8,209	12,735	28,143
	1904	72	8,798	9,341	5,003	7,324	15,882
Michigan	1914	35	1,144	1,584	656	1,740	3,416
	1909	40	1,218	1,355	494	1,030	2,327
	1904	14	529	379	177	294	702
Minnesota	1914	17	236	393	161	348	749
	1909	13	187	205	101	220	526
	1904	15	170	140	103	187	424
Missouri	1914	19	2,560	1,918	1,536	2,416	6,643
	1909	20	1,060	1,180	627	1,104	3,251
	1904	20	795	824	412	606	1,741
New Hampshire	1914	6	228	392	$122	$165	$352
	1909	6	193	422	87	155	388
	1904	5	83	172	32	88	150
New Jersey	1914	76	14,405	22,860	7,867	20,549	40,741
	1909	69	11,099	11,326	5,615	14,426	28,365
	1904	42	6,268	6,547	2,894	6,873	13,803
New York	1914	215	23,738	71,453	16,187	38,025	73,945
	1909	217	18,972	53,813	12,479	27,483	49,290
	1904	175	16,301	33,059	9,287	17,846	35,348
North Carolina	1914	4	78	89	31	106	177
	1909	3	120	38	31	97	150
Ohio	1914	119	12,695	17,771	7,409	17,482	36,121
	1909	115	8,073	11,959	3,847	7,226	18,777
	1904	92	5,114	7,138	2,268	4,699	11,019
Pennsylvania	1914	105	14,866	36,537	8,737	17,240	44,396
	1909	84	11,025	33,829	6,237	13,535	31,351
	1904	80	9,404	29,238	5,300	11,365	26,258
Rhode Island	1914	13	1,581	3,638	734	3,793	5,468
	1909	12	1,601	2,837	678	4,595	6,410
	1904	11	1,409	3,223	557	4,017	5,435
West Virginia	1914	4	162	1,369	75	184	566
	1909	5	137	1,115	77	135	398
Wisconsin	1914	29	2,115	3,616	1,340	2,064	5,397
	1909	30	1,409	2,333	820	1,451	3,836
	1904	23	1,204	2,173	673	1,020	3,194
All other states	1914	31	588	956	316	486	1,236
	1909	43	816	1,351	390	786	1,769
	1904	35	573	735	235	521	1,127

TABLE 32.—ELECTRICAL MACHINERY APPARATUS AND SUPPLIES—DETAIL STATEMENT, BY STATES, 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15 OR NEAREST REPRESENTATIVE DAY.					Capital.	EXPENSES.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of— Maximum. month.	Number, 15th day of— Minimum. month.		Male.	Female.	Male	Female		Officials.	Clerks, etc.
United States	1,030	144,712	368	3,878	16,325	6,063	118,078	Ja. 128,766	De 107,277	111,251	88,411	22,167	393	280	$355,724,756	$11,095,411	$24,195,870
California	29	1,024	12	48	91	93	780	My 887	Ja 671	721	502	215	4	.....	2,627,484	98,673	152,272
Colorado	8	102	2	15	2	4	79	Ja 95	De 70	69	47	22	.....	.....	356,313	22,345	4,527
Connecticut	43	5,880	5	174	428	214	5,059	Mh 5,407	Se 4,873	5,076	3,251	1,660	63	102	14,354,427	606,941	633,425
Illinois	142	20,485	49	553	2,634	766	16,483	Ja 18,186	De 14,018	14,084	11,097	2,943	34	10	34,944,881	1,489,069	3,305,234
Indiana	41	4,906	8	128	473	222	4,075	Fe 4,829	De 3,253	3,913	3,034	868	11	.....	10,059,747	333,219	835,484
Iowa	5	117	3	6	8	6	94	Fe 104	Au 80	88	76	12	.....	.....	256,759	10,350	15,564
Maryland	6	108	7	31	3	1	66	Jy 71	Oc [3] 59	62	57	3	2	.....	111,293	11,431	7,329
Massachusetts	91	20,249	28	386	1,819	891	17,125	Ja 18,644	De 15,126	17,584	14,066	3,424	55	39	45,067,320	1,202,139	2,876,609
Michigan	35	1,408	12	80	110	62	1,144	My 1,252	Se 1,026	1,139	810	324	4	1	2,651,519	218,363	143,006
Minnesota	17	317	9	29	28	15	236	De 263	Ja 210	233	219	13	1	.....	393,911	56,837	35,584
Missouri	19	3,131	7	105	314	145	2,560	Ja 2,856	De 2,274	2,456	1,871	555	5	25	6,676,852	292,474	485,595
New Hampshire	6	253	1	13	5	6	228	Ja [2] 258	Se 193	218	156	62	.....	.....	455,745	26,388	5,864
New Jersey	76	17,657	26	393	2,182	651	14,405	Ja 16,208	Oc 13,009	13,647	9,278	4,291	23	55	44,639,466	1,335,871	3,099,362
New York	215	28,927	77	682	3,239	1,191	23,738	Ja 26,326	De 21,924	22,184	19,314	2,788	77	5	82,589,056	2,301,926	4,768,093
North Carolina	4	91	.....	4	5	4	78	Se 86	Ap 63	86	37	49	.....	.....	131,490	4,600	6,210
Ohio	119	15,226	46	478	1,336	671	12,695	Ja 13,819	De 11,888	12,196	9,504	2,684	7	1	35,495,810	1,167,747	2,028,604
Pennsylvania	105	19,332	53	489	3,015	909	14,866	Se 15,482	De 13,813	12,881	11,269	1,515	74	23	61,587,091	1,351,629	4,911,444
Rhode Island	13	1,785	4	50	87	63	1,581	Ja 1,845	De 1,365	1,622	1,094	503	10	15	5,136,460	141,267	146,416
West Virginia	4	202	.....	12	23	5	102	Fe 193	De 139	161	160	1	.....	.....	651,491	20,696	29,443
Wisconsin	29	2,883	6	159	480	123	2,115	Fe 2,332	Se 1,987	2,289	2,100	166	21	2	7,005,779	325,296	647,653
All other states [4]	23	629	13	43	43	21	509	.....	.....	542	469	69	2	2	1,131,862	78,150	58,152

State.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					
	Salaries and wages.		Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage earners.	For contract work.	Rent of factory.	Taxes including internal revenue and corporation income.	Principal materials.	Fuel and rent of power			Total.	Steam engines. [1]	Internal-combustion engines. [2]	Water wheel and motors. [1]	Electric (rented).	
United States	$73,806,329	$290,889	$1,434,964	$1,851,906	$150,120,215	$4,607,861	$335,170,194	$180,442,118	227,731	142,085	10,105	1,065	74,476	187,643
California	471,555	10,000	35,618	10,702	1,535,217	25,041	2,861,653	1,301,395	1,116	50	12	.....	1,054	.....
Colorado	41,650	1,032	2,660	1,267	49,884	3,327	138,451	85,240	84	.....	.....	.....	84	.....
Connecticut	2,629,530	10,807	40,088	80,598	7,257,829	178,301	14,330,156	6,894,026	6,459	4,320	31	181	1,927	2,544
Illinois	12,365,964	40,288	353,623	363,233	19,060,369	318,795	45,667,456	26,288,292	21,140	17,232	258	125	3,525	14,487
Indiana	2,422,736	600	17,598	51,091	3,805,686	124,961	8,879,178	4,948,531	6,426	4,021	328	.....	2,077	744
Iowa	58,299	390	2,538	657	84,749	2,466	234,760	147,545	88	.....	25	.....	63	15
Maryland	35,369	429	1,975	1,074	37,487	2,204	121,034	81,343	80	.....	.....	.....	80	.....
Massachusetts	10,651,133	6,226	144,520	275,263	17,029,662	667,245	43,869,294	26,172,387	29,846	25,927	544	193	3,182	51,664
Michigan	656,486	5,409	18,627	19,531	1,695,318	44,230	3,415,500	1,675,952	1,584	126	163	.....	1,295	30
Minnesota	161,329	6,540	7,796	1,416	340,859	6,982	748,948	401,107	393	.....	24	.....	369	.....
Missouri	1,536,168	31,395	32,936	25,487	2,363,862	51,891	6,643,210	4,227,457	1,918	513	5	.....	1,400	1,524
New Hampshire	121,880	.....	3,170	3,009	159,929	5,079	351,877	186,869	392	.....	35	200	157	100
New Jersey	7,866,849	6,882	128,697	186,825	20,028,172	521,104	40,740,810	20,191,534	22,860	11,516	658	50	10,636	8,561
New York	16,186,875	106,892	364,318	287,304	36,616,722	1,408,037	73,944,708	35,919,949	71,453	36,344	1,816	20	33,273	27,203
North Carolina	31,280	.....	3,175	1,021	105,056	1,220	177,075	70,799	89	.....	.....	21	68	.....
Ohio	7,409,090	4,056	93,582	284,801	16,905,997	576,251	36,120,978	18,638,730	17,771	5,161	3,685	.....	8,925	12,250
Pennsylvania	8,737,295	28,315	128,845	154,489	16,810,210	429,810	44,395,789	27,155,769	36,537	31,430	1,622	20	3,465	60,803
Rhode Island	733,845	2,398	4,793	30,993	3,695,241	97,829	5,468,065	1,674,995	3,638	3,090	33	75	440	649
West Virginia	75,100	.....	2,467	5,413	167,870	16,192	566,368	382,306	1,369	375	810	.....	184	1,088
Wisconsin	1,339,587	29,230	36,663	60,599	1,949,824	113,896	5,396,802	3,333,082	3,616	1,785	56	.....	1,775	5,746
All other states*	274,309	.....	11,275	7,133	420,272	13,000	1,098,082	664,810	872	195	.....	180	497	235

[1] Owned power only.
[2] Includes rented power, other than electric.
[3] Same number reported for one or more other months.
* All other states embrace: Alabama, 1 establishment; Delaware, 1; District of Columbia, 1; Kansas, 1; Kentucky, 3; Louisiana, 2; Nebraska, 2; Oregon, 1; South Carolina, 1; Tennessee, 3; Texas, 1; Vermont, 1; Virginia, 1; Washington, 4.

AGRICULTURAL IMPLEMENTS.

By WILLIAM A. RUFF.

SUMMARY AND ANALYSIS.

Scope of the industry.—This industry includes all establishments whose chief products are machinery or implements used for tilling the soil, sowing or planting the seed, harvesting, and preparing the crop for market. These products are divided into four main groups, (1) planters and seeders, (2) plows and cultivators, (3) harvesting implements, and (4) seed separators. In addition, there is a minor group called "all other agricultural implements, including parts," which includes the miscellaneous implements that could not be assigned to the four main groups, and it also includes the parts, irrespective of the class of implements. Hand tools, such as rakes, hoes, spades, spading forks, etc., are included only when reported as subsidiary products of establishments engaged primarily in the manufacture of agricultural implements.

Comparison with earlier censuses.—Statistics for the industry are shown in the reports for each census since 1849, when 1,333 establishments, with products valued at $6,842,611, were reported. By 1859 the number of establishments had increased to 1,982 and the value of products to $17,597,960. The number of establishments engaged in the manufacture of agricultural implements reached the maximum at the census of 1869, when 2,076 were reported, with products valued at $52,066,875, and employment was given to 25,249 persons. Since 1869 the number of establishments has decreased steadily, but the value of products has increased from census to census since 1849.

Table 1 summarizes the statistics of establishments engaged in the manufacture of agricultural implements for each census from 1869 to 1914 and gives percentages of increase.

Table 1

	NUMBER OR AMOUNT.							PER CENT OF INCREASE.[1]					
	1914	1909	1904	1899	1889	1879	1869	1909–1914	1904–1909	1899–1904	1889–1899	1879–1889	1869–1879
Number of establishments	601	640	648	715	910	1,943	2,076	−6.1	−1.2	−9.4	−21.4	−53.2	−6.4
Persons engaged	58,118	60,229	55,089	57,254	(2)	(2)	(2)	−3.5	9.3	−3.8	.....	.....	.....
Proprietors and firm members	431	465	496	626	(2)	(2)	(2)	−7.3	−6.2	−20.8	.....	.....	.....
Salaried employees	9,228	9,213	7,199	10,046	(2)	(2)	(2)	0.2	28.0	−28.3	.....	.....	.....
Wage earners (average number)	48,459	50,551	47,394	46,582	38,827	39,580	25,249	−4.1	6.7	1.7	(3)	(3)	(3)
Primary horsepower	121,428	100,601	89,738	70,646	50,395	44,731	26,082	20.7	12.1	27.0	40.2	12.7	71.5
Capital	$338,531,673	$256,281,086	$196,740,700	$157,707,951	$145,313,997	$62,109,668	$34,534,600	32.1	30.3	24.8	8.5	134.0	78.3
Salaries and wages	47,603,790	38,748,613	32,575,296	30,814,090	21,811,761	15,359,610	12,151,504	22.9	19.0	5.7	41.3	42.0	26.4
Salaries	13,010,465	10,139,998	7,572,646	8,363,210	(2)	(2)	(2)	28.3	33.9	−9.5	.....	.....	.....
Wages	34,593,325	28,608,615	25,002,650	22,450,880	(2)	(2)	(2)	20.9	14.4	11.4	.....	.....	.....
Paid for contract work	104,488	93,632	133,420	138,146	(2)	(2)	(2)	11.6	−29.8	−3.4	.....	.....	.....
Rent and taxes (including internal revenue)	1,714,209	1,117,440	[4] 795,949	[4] 597,679	(3)	(3)	(3)	53.4	40.4	33.2	.....	.....	.....
Cost of materials	73,508,645	60,306,519	48,281,406	43,944,628	31,603,265	31,531,170	21,473,925	21.9	24.9	9.9	39.1	0.2	46.8
Value of products	164,086,835	146,329,268	112,007,344	101,207,428	81,271,651	68,640,486	52,066,875	12.1	30.6	10.7	24.5	18.4	31.8
Value added by manufacture (value of products less cost of materials)	90,578,190	86,022,749	63,725,938	57,262,800	49,668,386	37,109,316	30,592,950	5.3	35.0	11.3	15.3	33.8	21.3

[1] A minus sign (−) denotes decrease. [2] Figures not available. [3] Figures not strictly comparable. [4] Exclusive of internal revenue.

With the exception of the decrease in the number of establishments, proprietors, and firm members, and salaried employees, and the slight decrease in wage earners from 1909 to 1914, the industry has developed constantly during the years covered by Table 1. The decrease in proprietors and firm members follows the decrease in number of establishments, and it is also due in part to the fact that some of the establishments operated by individuals or partnerships in 1899 were incorporated and the persons who would have been reported as proprietors and firm members were returned as salaried employees at subsequent censuses. The amount paid for contract work depends upon the method of conducting business and the amount reported is no indication of a decrease in the magnitude of the industry.

The products reported for each census include articles other than agricultural implements, such as wagons, pumps, windmills, cutlery, edge tools, and miscellaneous machine-shop products. Some of the establishments in 1914 manufactured automobiles. While these articles are reported by the different establishments as subsidiary products of minor importance, the total amounted to $31,277,021 in 1914. The schedule used in 1909 did not show separately the value of products of this character, but so far as they could be identified, their value amounted to $11,477,829.

On the other hand, agricultural implements were manufactured in 1914, to the value of $4,033,797, by establishments engaged primarily in the manufacture of other products, and the corresponding amount in 1909 was $2,987,276.

Summary, by states.—Table 2 summarizes the more important statistics of the industry, by states, the states being arranged according to the value of products reported for 1914. Some states for which data can not be shown separately without disclosing the operations of individual establishments ranked higher than some of those which are named in the table.

Table 2

STATE.	CENSUS OF 1914.												PER CENT OF INCREASE.[1]								
	Number of establishments.	Wage earners.				Value of products.				Value added by manufacture.				Wage earners (average number).			Value of products.			Value added by manufacture.		
		Average number.	Per cent distribution.	Rank.		Amount.	Per cent distribution.	Rank.		Amount.	Per cent distribution.	Rank.		1909–1914	1904–1909	1899–1904	1909–1914	1904–1909	1899–1904	1909–1914	1904–1909	1899 1904
				1914	1909			1914	1909			1914	1909									
United States	601	48,459	100.0	....	....	$164,086,835	100.0	....	....	$90,578,190	100.0	....	....	—4.1	6.7	1.7	12.1	30.6	10.7	5.3	35.0	11.3
Illinois	73	19,556	40.4	1	1	65,337,663	39.8	1	1	32,460,102	35.8	1	1	1.6	25.3	—15.8	14.1	49.1	—8.6	(2)	57.0	—10.8
Wisconsin	46	3,143	6.5	5	5	20,119,058	12.3	2	5	11,443,424	12.6	2	5	16.2	—24.2	8.5	76.3	13.2	27.8	53.1	14.0	42.7
Ohio	59	5,464	11.3	2	2	17,484,615	10.7	3	3	9,674,830	10.7	3	4	—8.9	6.0	—17.4	21.1	12.0	—7.8	19.1	12.8	—9.0
New York	50	5,392	11.1	3	3	14,576,694	8.9	4	2	7,503,489	8.3	5	3	—5.7	—9.0	13.1	—2.6	14.8	23.8	—12.3	16.1	29.0
Indiana	33	3,991	8.2	4	4	12,791,461	7.8	5	4	9,304,796	10.3	4	2	—16.0	34.0	3.6	—6.4	69.6	25.7	5.7	73.1	34.0
Michigan	30	2,143	4.4	6	7	7,731,217	4.7	6	6	5,091,259	5.6	6	6	— 9.2	—25.4	62.8	—16.6	6.3	37.5	—20.2	22.2	35.4
Iowa	34	1,164	2.4	8	8	5,216,245	3.2	7	8	3,164,411	3.5	7	8	—11.7	28.3	59.5	9.7	76.7	78.4	22.4	93.7	59.1
Pennsylvania	38	2,018	4.2	7	6	4,843,655	3.0	8	7	2,936,361	3.3	8	7	—16.0	.3	53.1	0.8	—4.2	56.9	7.9	—7.4	49.6
Minnesota	17	872	1.8	9	9	3,812,728	2.3	9	9	2,339,218	2.6	9	9	—14.0	—13.8	26.7	26.5	4.5	63.5	21.6	7.2	71.8
California	28	704	1.5	10	11	1,962,235	1.2	11	10	1,061,927	1.2	11	11	13.2	29.9	—14.8	—26.5	79.9	9.3	—13.6	61.7	—7.2
Georgia	18	577	1.2	12	12	1,501,347	0.9	12	12	656,518	0.7	13	13	4.5	—5.5	62.2	34.4	7.4	40.9	23.0	21.9	46.0
Tennessee	17	517	1.1	13	10	1,121,694	0.7	13	13	730,612	0.8	12	12	—19.8	5.2	64.3	11.8	30.6	66.1	23.7	29.9	74.3
New Jersey	9	270	0.6	16	18	930,724	0.6	14	15	485,330	0.5	14	15	20.5	9.8	38.8	23.3	92.6	56.8	13.3	56.2	104.5
Vermont	9	311	0.6	15	15	696,294	0.4	15	17	386,127	0.4	15	17	—13.6	45.7	17.1	19.6	31.7	19.5	24.4	19.2	26.2
Missouri	18	240	0.5	18	14	569,904	0.3	16	14	299,827	0.3	17	14	—45.2	—16.6	6.5	—41.9	—8.1	11.9	—37.1	—22.6	12.6
Massachusetts	4	325	0.7	14	16	552,381	0.3	17	16	253,858	0.3	18	16	—6.1	—17.2	34.0	—14.6	—1.1	22.2	—29.5	—10.4	26.0
Virginia	20	269	0.6	17	17	484,240	0.3	18	18	316,324	0.4	16	18	—1.1	—13.4	12.9	—6.2	27.7	17.8	16.1	22.5	6.1
Washington	7	134	0.3	20	23	392,053	0.2	19	19	207,630	0.2	19	19	.....	.....	.....	—1.6	.....	.....	—16.2	.....	.....
Kansas	11	64	0.1	23	21	314,704	0.2	20	20	161,204	0.2	21	20	—49.2	20.0	.....	—14.7	—6.6	.....	—22.1	8.9	.....
North Carolina	17	149	0.3	19	20	305,108	0.2	21	22	206,840	0.2	20	22	12.9	23.4	.....	16.5	106.3	.....	20.4	.....	.....
Maine	5	126	0.3	21	22	216,910	0.1	23	23	146,565	0.2	22	23	4.1	—20.9	—29.8	—4.2	9.7	—29.0	3.2	9.2	—32.3
Mississippi	5	32	0.1	27	33	50,638	(2)	28	32	29,563	(2)	30	32	.....	.....	.....	.....	.....	.....	.....	.....	.....
Alabama	8	24	(2)	29	24	45,685	(2)	29	24	31,594	(2)	29	24	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Hampshire	3	21	(2)	30	29	35,362	(2)	31	30	21,483	(2)	31	29	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oregon	3	6	(2)	35	36	29,447	(2)	32	33	20,041	(2)	32	33	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Carolina	3	14	(2)	31	30	26,744	(2)	33	31	18,278	(2)	33	30	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other states	36	933	1.9	....	....	2,938,029	1.8	....	....	1,626,579	1.8	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....

[1] Percentages are based on figures in Table 17; a minus sign (—) denotes decrease; percentages are omitted where base is less than 100 for wage earners or less than $100,000 for value of products, or value added by manufacture, or where comparable figures can not be given.
[2] Less than one-tenth of 1 per cent.

Illinois was the leading state in the manufacture of agricultural implements in 1914 and 1909, producing in 1914 practically two-fifths of the total value of products for the industry, and employing slightly over 40 per cent of the total number of wage earners.

The six leading states, Illinois, Wisconsin, Ohio, New York, Indiana, and Michigan, reported 84.2 per cent of the total value of products in 1914 and 82.7 per cent in 1909. Wisconsin, which was fifth in rank in 1909 and fourth in 1904, according to value of products, occupied second place in 1914, with 12.3 per cent of the total, while according to the average number of wage earners employed it remained in fifth place, with 6.5 per cent of the total. A large proportion of the value of products of the establishments in Wisconsin consisted of products other than agricultural implements, such as engines, automobiles, carriages and wagons, trucks, furniture, etc., and the advance in rank made by the state is due principally to the increase in the value of products of this nature. New York, which was second in importance in 1909 in value of products, and third in average number of wage earners, dropped to fourth place in value of products in 1914, with 8.9 per cent of the total, but continued to be third in number of wage earners, with 11.1 per cent of the total. Of the 26 states shown in Table 2, 11 show increases in the value of products, 7 in average number of wage earners, and 14 in the value added by manufacture.

Wisconsin made the greatest actual increase, as well as per cent of increase, both in value of products and value added by manufacture in 1914 as compared with 1909. Michigan, with a loss of $1,541,570 in value of products, shows the greatest actual loss in 1914 as compared with 1909, but Missouri shows the greatest proportionate decrease—41.9 per cent. New Jersey made the greatest per cent of gain in the average number of wage earners during the five-year period 1909–1914.

Persons engaged in the industry.—Table 3 shows for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, the average number of wage earners being distributed also by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Table 3

CLASS.	Census year.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Male.	Female.	Per cent of total. Male.	Female.
All classes	1914	58,118	56,400	1,718	97.0	3.0
	1909	60,229	58,517	1,712	97.2	2.8
Proprietors and officials	1914	2,087	2,050	37	98.2	1.8
	1909	2,489	2,445	44	98.2	1.8
Proprietors and firm members	1914	431	409	22	94.9	5.1
	1909	465	448	17	96.3	3.7
Salaried officers of corporations	1914	552	540	12	97.8	2.2
	1909	569	564	5	99.1	0.9
Superintendents and managers	1914	1,104	1,101	3	99.7	0.3
	1909	1,455	1,433	22	98.5	1.5
Clerks and other subordinate salaried employees	1914	7,572	6,384	1,188	84.3	15.7
	1909	7,189	6,137	1,052	85.4	14.6
Wage earners (average number)	1914	48,459	47,966	493	99.0	1.0
	1909	50,551	49,935	616	98.8	1.2
16 years of age and over	1914	48,377	47,884	493	99.0	1.0
	1909	50,345	49,730	615	98.8	1.2
Under 16 years of age	1914	82	82	.....	100.0	.....
	1909	206	205	1	99.5	0.5

The number of persons engaged in the industry in 1914 was 58,118, of whom 97 per cent were males and 3 per cent females, the corresponding percentages in 1909 being 97.2 and 2.8 per cent, respectively. The total number of persons engaged in the industry in 1914 shows a decrease of 3.5 per cent as compared with 1909, the entire loss being among the males. The number of persons in each occupational group decreased with the exception of clerks and other subordinate salaried employees, which group increased 5.3 per cent. There were only 493 female wage earners reported in 1914 as compared with 616 in 1909, a decrease of 20 per cent. In 1914 females represented only 1 per cent of the total number of wage earners, while in 1909 the proportion was 1.2 per cent.

Table 4 gives, for the several classes of persons engaged in the industry, the percentages of increase from 1909 to 1914, and the per cent distribution at the two censuses.

Table 4

CLASS.	PERSONS ENGAGED IN THE INDUSTRY. Per cent of increase,[1] 1909–1914. Total.	Male.	Female.	Per cent distribution. Total. 1914	Total. 1909	Male. 1914	Male. 1909	Female. 1904	Female. 1909
All classes	−3.5	−3.6	0.3	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials	−16.2	−16.2	.....	3.6	4.1	3.6	4.2	2.2	2.6
Proprietors and firm members	−7.3	−8.7	.....	0.7	0.8	0.7	0.8	1.3	1.0
Salaried officers of corporations	−3.0	−4.3	.....	0.9	0.9	1.0	1.0	0.7	0.3
Superintendents and managers	−24.1	−23.2	.....	1.9	2.4	1.9	2.4	0.2	1.3
Clerks and other subordinate salaried employees	5.3	4.0	12.9	13.0	11.9	11.3	10.5	69.1	61.4
Wage earners (average number)	−4.1	−3.9	−20.0	83.4	83.9	85.1	85.3	28.7	36.0
16 years of age and over	−3.9	−3.7	−19.8	83.2	83.6	84.9	85.0	28.7	35.9
Under 16 years of age	−60.2	−60.0	[2]	0.1	0.3	0.2	0.3	[2]	0.1

[1] A minus sign (−) denotes decrease; percentages are omitted where base is less than 100.

[2] Less than one-tenth of 1 per cent.

Of the total number of persons engaged in the industry in 1914, 83.4 per cent were wage earners, 13 per cent were clerks and other subordinate salaried employees, and 3.6 per cent were proprietors and officials. In 1909 the corresponding proportions were 83.9 per cent, 11.9 per cent, and 4.1 per cent, respectively. Of the males, 85.1 per cent were wage earners in 1914 and 85.3 per cent in 1909, while of the females only 28.7 per cent were wage earners at the census of 1914, as compared with 36 per cent in 1909. Over two-thirds of the females engaged in the industry in 1914 were employed as clerks and other subordinate salaried employees, and in 1909 about three-fifths were in this group.

The average number of wage earners in each state for 1914, 1909, and 1904 is given in Table 17. The average number, distributed by sex and age, is not shown for the individual states, but Table 18 gives such a distribution of the number employed on December 15, or the nearest representative day. Illinois reported the largest number of female employees—201 in 1914 and 264 in 1909.

Wage earners employed, by months.—The following table gives for the industry the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

Table 5

MONTH.	WAGE EARNERS IN THE INDUSTRY. Number.[1] 1914	1909	1904	Per cent of maximum. 1914	1909	1904
January	61,746	51,540	52,372	99.8	92.9	95.7
February	61,900	53,673	54,501	100.0	96.8	99.6
March	58,143	54,759	54,697	93.9	98.7	100.0
April	54,305	53,165	52,457	87.7	95.9	95.9
May	49,904	50,990	49,235	80.6	91.9	90.0
June	46,990	48,727	45,586	75.9	87.9	83.3
July	45,169	45,027	41,162	73.0	81.2	75.3
August	37,340	44,906	40,350	60.3	81.0	73.8
September	35,208	46,484	39,656	56.9	83.8	72.5
October	39,536	49,477	42,585	63.9	89.2	77.9
November	44,219	52,410	46,127	71.4	94.5	84.3
December	47,048	55,465	50,000	76.0	100.0	91.4

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904, the average number employed during the month.

In 1914 the maximum number employed was 61,900 and was reported for February; in 1909 it was 55,465 for December; in 1904 it was 54,697 for March. The minimum number was employed in

September in 1914 and 1904 and in August in 1909. There was a considerable fluctuation from month to month in the number of wage earners employed in the industry during 1914, the minimum number being 43.1 per cent less than the maximum. The difference between the minimum and maximum months in 1909 was 19 per cent, and in 1904, 27.5 per cent.

Table 6 gives the total average number of wage earners employed during 1914, together with the total number employed on the 15th of each month, or the nearest representative day, for each state for which statistics can be shown, without disclosing individual operations in which the average number of wage earners was 500 or more in 1914.

Table 6

WAGE EARNERS: 1914.
[Month of maximum employment for each state is indicated by **boldface** figures and that of minimum by *italic* figures.]

STATE.	Average number employed during year.	Number employed on 15th day of the month or nearest representative day.											Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States	48,459	61,746	**61,900**	58,143	*54,305*	49,904	46,990	45,169	37,340	*35,208*	39,536	44,219	47,048	56.9
California	704	573	617	711	782	867	**926**	638	632	*564*	603	723	812	60.9
Georgia	577	798	749	607	556	482	*407*	469	558	545	538	571	644	51.0
Illinois	19,556	**26,217**	25,770	23,011	21,240	19,940	18,944	17,991	12,695	*12,338*	17,147	19,578	19,801	47.1
Indiana	3,991	4,671	5,095	4,792	4,534	4,000	3,253	4,358	4,381	3,462	3,116	*2,982*	3,248	58.5
Iowa	1,164	1,231	1,259	**1,332**	1,264	1,224	1,305	1,258	1,072	947	*889*	1,122	1,065	66.7
Michigan	2,143	2,379	2,558	**2,611**	2,488	2,383	2,387	2,473	2,130	*1,838*	1,343	1,704	1,892	51.2
Minnesota	872	1,031	1,091	**1,104**	1,065	998	957	1,012	782	554	532	*414*	924	37.5
New York	5,392	7,423	7,395	7,012	6,367	5,603	4,850	4,109	*2,563*	4,000	4,237	5,309	5,836	34.5
Ohio	5,464	6,629	**6,793**	6,758	6,383	5,592	5,468	5,210	5,300	4,801	4,175	*4,132*	4,327	60.8
Pennsylvania	2,018	2,127	2,171	**2,205**	2,189	2,108	2,109	2,122	2,006	1,914	1,805	*1,714*	1,746	77.7
Tennessee	517	621	619	573	516	515	481	485	499	476	490	*464*	465	74.7
Wisconsin	3,143	**4,643**	4,244	3,978	3,655	3,078	2,807	2,469	2,312	*1,918*	2,093	2,917	3,542	41.3

With the exception of California, all states shown in this table reported the maximum number of wage earners as employed in one of the first three months of 1914. November was the month of minimum employment in five states, September in four states, and June, August, and October in one state each. The months of maximum and minimum employment for 1914 and the number of wage earners reported for these months are given for other states in Table 18.

Prevailing hours of labor.—In Table 7 the average number of wage earners reported for 1914 and 1909 for the industry has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment was classified as a total, even though a few employees worked a greater or smaller number of hours.

The totals for the United States indicate a general tendency to reduce the hours of labor per week. Of the total number of wage earners reported for 1914, 76.2 per cent were employed in establishments where the prevailing hours of labor were less than 60 per week, while in 1909 only 67.5 per cent were employed in such establishments. At both censuses over one-half of the wage earners were employed in establishments where the prevailing hours of labor were between 54 and 60 hours per week. In 1914, in all states, with the exception of Georgia, Minnesota, Tennessee, and Wisconsin, the majority of wage earners were employed in establishments where the prevailing hours of labor were less than 60 per week. In Georgia, Minnesota, Tennessee, and Wisconsin the largest number of wage earners were employed in establishments operating 60 hours per week. The proportion of wage earners in establishments where the prevailing hours of labor were less than 60 per week was greater in all states in 1914 than in 1909, with the exception of Tennessee and Wisconsin. Only 10 wage earners were employed in establishments working over 60 hours per week in 1914, as compared with 132 in 1909.

Table 7

AVERAGE NUMBER OF WAGE EARNERS.

STATE.	Census year.	Total.	In establishments where the prevailing hours of labor per week were—						
			48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72.
United States	1914	48,459	4,461	2,632	4,559	25,258	11,539	..9	1
	1909	50,551	453	2,029	4,081	27,549	16,307	131	1
California	1914	704	8	26	670	.....	.....	.....	...
	1909	622	2	.....	584	.....	20	16	...
Georgia	1914	577	.....	77	.....	52	448	.....	...
	1909	552	.....	3	.....	106	443	.....	...
Illinois	1914	19,556	1,197	730	566	13,752	3,311	.....	...
	1909	19,240	.....	.....	386	13,664	5,077	113	...
Indiana	1914	3,991	2,898	407	332	.....	354	.....	...
	1909	4,749	.....	539	459	2,879	872	.....	...
Iowa	1914	1,164	1	141	37	405	580	.....	...
	1909	1,318	.....	.....	86	493	739	.....	...
Michigan	1914	2,143	199	411	788	411	334	.....	...
	1909	2,359	.....	.....	1,119	787	453	.....	...
Minnesota	1914	872	1	.....	9	179	683	.....	...
	1909	1,014	1	.....	6	39	968	.....	...
New York	1914	5,392	.....	13	132	3,571	1,675	.....	1
	1909	5,717	20	.....	132	3,549	2,016	.....	...
Ohio	1914	5,464	10	593	811	3,519	531	.....	...
	1909	5,997	195	1,294	387	2,354	1,767	.....	...
Pennsylvania	1914	2,018	1	16	571	1,178	252	.....	...
	1909	2,401	1	.....	452	850	1,097	.....	1
Tennessee	1914	517	.....	.....	91	.....	418	8	...
	1909	645	1	.....	154	.....	490	.....	...
Wisconsin	1914	3,143	4	65	88	802	2,183	1	...
	1909	2,704	.....	.....	.....	1,906	798	.....	...

Character of ownership.—Table 8 presents statistics concerning the character of ownership, or legal organization, of establishments in the industry, for 1914 and 1909.

Table 8

CHARACTER OF OWNERSHIP.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	601	48,459	$164,086,835	$90,578,190
	1909	640	50,551	146,329,268	86,022,749
Individuals	1914	188	819	2,087,503	1,189,963
	1909	184	965	2,174,866	1,146,060
Corporations	1914	318	46,233	157,490,390	86,974,749
	1909	349	48,141	140,663,575	82,889,590
All others	1914	95	1,407	4,508,942	2,413,478
	1909	107	1,445	3,490,827	1,987,099
Per cent distribution:					
Individuals	1914	31.3	1.7	1.3	1.3
	1909	28.8	1.9	1.5	1.3
Corporations	1914	52.9	95.4	96.0	96.0
	1909	54.5	95 2	96.1	96.4
All others	1914	15.8	2.9	2.8	2.7
	1909	16.7	2.9	2.4	2.3

That corporations largely predominate in the industry is shown by the fact that 52.9 per cent of the establishments reported for 1914 were operated under this form of ownership and their products formed 96 per cent of the total value of products.

As a rule the establishments operated by individuals were comparatively small, the average value of products per establishment being $11,104 in 1914, as compared with $495,253 for corporations and $47,463 for other forms of ownership.

Table 9 shows the number of establishments, average number of wage earners, and value of products classified according to form of ownership, for the industry, for 1914 and 1909, and separate totals for 1914 only for the states that can be shown without the disclosure of individual operations.

The establishments under corporate ownership employed the majority of wage earners in each state shown in Table 9 and reported the greater proportion of the value of products.

Table 9

STATE.	NUMBER OF ESTABLISHMENTS OWNED BY—			AVERAGE NUMBER OF WAGE EARNERS.						VALUE OF PRODUCTS.						
				Total.	In establishments owned by—			Per cent of total.			Total.	Of establishments owned by—			Per cent of total.		
	Individuals.	Corporations.	All others.		Individuals.	Corporations.	All others.	Individuals.	Corporations.	All others.		Individuals.	Corporations.	All others.	Individuals.	Corporations.	All others.
United States:																	
1914	188	318	95	48,459	819	46,233	1,407	1.7	95.4	2.9	$164,086,835	$2,087,503	$157,490,390	$4,508,942	1.3	96.0	2.7
1909	184	349	107	50,551	965	48,141	1,445	1.9	95.2	2.9	146,329,268	2,174,866	140,663,575	3,490,827	1.5	96.1	2.4
California	14	8	6	704	26	665	13	3.7	94.5	1.8	1,962,235	177,920	1,740,224	44,091	9.1	88.7	2.2
Georgia	4	9	5	577	14	531	32	2.4	92.0	5.5	1,501,347	21,876	1,380,941	98,530	1.5	92.0	6.6
Illinois	11	51	11	19,556	48	19,443	65	0.2	99.4	0.3	65,337,663	151,057	65,017,298	169,308	0.2	99.5	0.3
Indiana	8	23	2	3,991	[1] 32	3,959	.....	0.8	99.2	.....	12,791,461	[1] 55,657	12,735,804	.....	0.4	99.6	.....
Iowa	9	16	9	1,164	12	965	187	1.0	82.9	16.1	5,216,245	48,430	4,300,685	867,130	0.9	82.4	16.6
Michigan	8	18	4	2,143	96	2,027	20	4.5	94.6	0.9	7,731,217	273,131	7,390,617	67,469	3.5	95.6	0.9
Minnesota	3	11	3	872	5	857	10	0.6	98.3	1.1	3,812,728	21,785	3,740,339	50,604	0.6	98.1	1.3
New York	14	29	7	5,392	90	5,263	39	1.7	97.6	0.7	14,576,694	187,918	14,137,363	251,413	1.3	97.0	1.7
Ohio	14	41	4	5,464	59	5,232	173	1.1	95.8	3.2	17,484,615	168,920	16,335,978	979,717	1.0	93.4	5.6
Pennsylvania	17	15	6	2,018	137	1,209	672	6.8	59.9	33.3	4,843,655	211,440	3,169,077	1,463,138	4.4	65.4	30.2
Tennessee	6	8	3	517	71	440	6	13.7	85.1	1.2	1,121,694	193,636	913,509	14,549	17.3	81.4	1.3
Wisconsin	13	24	9	3,143	21	3,100	22	0.7	98.6	0.7	20,119,058	112,234	19,928,945	77,879	0.6	99.0	0.4

[1] Includes the group "all others."

Size of establishments.—The tendency of the industry to become concentrated in large establishments is indicated by the statistics given in Table 10.

In 1914, 6 per cent of the establishments manufactured products to the value of $1,000,000 and over as compared with 5.3 per cent in 1909. Although such establishments represented only a small proportion of the total number at both censuses, they employed 62.7 per cent of the wage earners and reported 68.5 per cent of the total value of products in 1914, and 60 per cent of the wage earners and 64.3 per cent of the total value of products in 1909. Of the other groups, that comprising establishments having products of less than $5,000 in value was the only one which showed an increase in 1914 in number of wage earners and value of products as compared with 1909.

Table 10

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	601	48,459	$164,086,835	$90,578,190
	1909	640	50,551	146,329,268	86,022,749
Less than $5,000	1914	169	176	407,827	250,073
	1909	156	171	359,971	227,415
$5,000 to $20,000	1914	129	653	1,335,821	742,048
	1909	172	844	1,827,822	1,059,129
$20,000 to $100,000	1914	142	2,662	6,845,330	3,789,067
	1909	142	2,928	6,927,862	3,779,091
$100,000 to $1,000,000	1914	125	14,601	43,067,105	23,497,005
	1909	136	16,287	43,075,407	23,531,486
$1,000,000 and over	1914	36	30,367	112,430,752	62,299,997
	1909	34	30,321	94,138,206	57,425,628
Per cent distribution:					
Less than $5,000	1914	28.1	0.4	0.2	0.3
	1909	24.4	0.3	0.3	0.3
$5,000 to $20,000	1914	21.5	1.3	0.8	0.8
	1909	26.9	1.7	1.3	1.2
$20,000 to $100,000	1914	23.6	5.5	4.2	4.2
	1909	22.2	5.8	4.7	4.4
$100,000 to $1,000,000	1914	20.8	30.1	26.2	25.9
	1909	21.3	32.2	29.4	27.4
$1,000,000 and over	1914	6.0	62.7	68.5	68.8
	1909	5.3	60.0	64.3	66.8

Table 11 shows the size of establishments in 1914 and 1909, as measured by the number of wage earners employed, for the industry as a whole and for 12 of the leading states.

Table 11

STATE.	Census year.	TOTAL.		ESTABLISHMENTS EMPLOYING—															
				No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.	
		Establishments	Wage earners (average number)	Establishments.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States	1914	601	48,459	35	242	520	110	1,367	76	2,408	45	3,156	50	8,286	22	7,894	14	8,948	7	15,880
	1909	640	50,551	40	246	589	126	1,478	84	2,724	49	3,682	49	7,911	28	9,991	11	7,994	7	16,182
California	1914	28	704	.....	21	43	3	47	2	54	1	58	.....	.....	.....	.....	1	502	.....	.....
	1909	25	622	.....	15	38	4	43	2	48	1	52	3	441	.....	.....	.....	.....	.....	.....
Georgia	1914	18	577	.....	10	28	2	27	3	73	1	76	2	373	.....	.....	.....	.....	.....	.....
	1909	17	552	1	6	11	5	48	2	54	1	74	2	365	.....	.....	.....	.....	.....	.....
Illinois	1914	73	19,556	1	23	54	7	95	7	217	8	587	10	1,640	8	2,836	6	3,965	3	10,162
	1909	79	19,240	5	16	35	17	186	5	172	9	618	13	1,889	6	2,108	4	3,067	4	11,165
Indiana	1914	33	3,991	1	8	12	10	131	4	124	1	67	6	996	1	466	1	549	1	1,646
	1909	39	4,749	2	12	25	9	119	6	147	3	276	2	352	3	1,397	1	523	1	1,910
Iowa	1914	34	1,164	4	14	33	5	48	5	148	1	71	5	864	.....	.....	.....	.....	.....	.....
	1909	42	1,318	1	19	45	7	75	9	277	3	224	2	403	1	294	.....	.....	.....	.....
Michigan	1914	30	2,143	1	8	15	6	96	5	148	5	316	2	447	3	1,121	.....	.....	.....	.....
	1909	32	2,359	2	12	31	4	67	6	207	2	146	1	170	5	1,738	.....	.....	.....	.....
Minnesota	1914	17	872	1	9	22	4	53	1	44	.....	.....	1	150	.....	.....	1	503	.....	.....
	1909	17	1,014	1	3	7	8	94	.....	.....	3	219	.....	.....	2	694	.....	.....	.....	.....
New York	1914	50	5,392	5	12	21	14	194	9	329	3	215	2	309	1	400	2	1,433	2	2,491
	1909	57	5,717	2	22	53	9	125	13	485	4	321	1	150	2	688	3	2,130	1	1,765
Ohio	1914	59	5,464	2	16	38	10	131	7	237	6	469	13	2,149	3	1,138	2	1,302	.....	.....
	1909	55	5,997	3	12	33	8	90	10	318	3	227	13	2,170	4	1,287	1	530	1	1,342
Pennsylvania	1914	38	2,018	6	11	22	4	44	7	194	3	227	4	545	3	986	.....	.....	.....	.....
	1909	36	2,401	5	13	23	4	53	4	139	4	327	4	650	1	405	1	804	.....	.....
Tennessee	1914	17	517	.....	11	28	.....	.....	3	107	2	113	.....	.....	1	269	.....	.....	.....	.....
	1909	16	645	.....	8	14	2	16	2	81	3	207	.....	.....	1	327	.....	.....	.....	.....
Wisconsin	1914	46	3,143	3	22	41	8	91	4	148	4	277	2	327	2	678	.....	.....	1	1,581
	1909	45	2,704	5	17	42	10	135	4	127	2	179	4	684	2	597	1	940	.....	.....

The statistics given in this table are a further illustration of the extent to which the industry is carried on in large establishments. In both 1914 and 1909, 7 establishments which employed over 1,000 wage earners reported nearly one-third the total number of wage earners. In 1914, 43 establishments, which employed over 251 wage earners each, reported 67.5 per cent of the total number of wage earners, and in 1909, 46 similar establishments reported 67.6 per cent.

The 35 establishments for which no wage earners were reported are comparatively small plants in which the work was done by the proprietors or firm members. Some of these establishments employed a few wage earners for a short time, but the number was so small and the period of employment so short that in computing the average number, as described in the "Explanation of terms," no wage earners could be shown.

Engines and power.—Table 12 shows, for 1914, 1909, and 1904, for the industry, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

Table 12

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	3,437	1,794	1,177	121,428	100,601	89,738	100.0	100.0	100.0
Owned	823	862	995	90,492	84,717	85,835	74.5	84.2	95.6
Steam engines and turbines [1]	470	504	698	79,688	71,894	77,175	65.6	71.5	86.0
Internal-combustion engines	280	261	165	5,113	4,433	2,360	4.2	4.4	2.6
Water wheels, turbines, and motors	73	97	132	5,691	8,390	6,300	4.7	8.3	7.0
Rented	2,614	932	182	30,936	15,884	3,903	25.5	15.8	4.3
Electric	2,614	932	182	30,764	15,684	3,828	25.3	15.6	4.3
Other	.....	.....	.....	172	200	75	0.1	0.2	0.1
Electric	5,789	2,057	872	83,117	38,905	20,713	100.0	100.0	100.0
Rented	2,614	932	182	30,764	15,684	3,828	37.0	40.3	18.5
Generated by establishments reporting	3,175	1,125	690	52,353	23,221	16,885	63.0	59.7	81.5

[1] Figures for horsepower include for 1909 and 1904 the amounts reported under the head of "other" owned power.

The total primary power increased 35.3 per cent during the decade. Power generated by steam is the principal kind used, representing 65.6 per cent of the total in 1914, 71.5 per cent in 1909, and 86 per cent in 1904. Water wheels, turbines, and motors have decreased in number from census to census since 1904, but show an increase of 33.2 per cent in horsepower for the period 1904–1909, and a loss of 2,699 horsepower, or 32.2 per cent, in 1914 as compared with 1909. The most important gain is shown for rented electric power, which increased from 3,828 horsepower in 1904 to 30,764 horsepower in 1914. In 1904 only 4.3 per cent of the total primary horsepower was rented electric power, but the proportion increased to 25.3 per cent in 1914. The electric motors run by power generated in the establishments reporting increased 360.1 per cent in number and 210.1 per cent in horsepower during the decade.

The number of steam engines and turbines decreased 32.7 per cent between 1904 and 1914, and electric motors increased more than sixfold in the same period. Of the total number of electric motors in 1914, 45.2 per cent were operated by rented power and 54.8 per cent by power generated in the establishments reporting.

Fuel.—Table 13 shows, for 1914, the quantity of each kind of fuel used, for which data were obtained, for the industry as a whole and for 12 states separately.

Table 13

STATE.	COAL. Anthracite (tons, 2,240 lbs.).	COAL. Bituminous (tons, 2,000 lbs.).	Coke (tons, 2,000 lbs.).	Oil, including gasoline (barrels).	Gas (1,000 cubic feet).
United States	8,863	555,271	104,386	240,060	234,349
California	21	564	153	2,957	5,106
Georgia	4	4,720	1,531	6	.....
Illinois	536	289,849	46,500	131,241	5,049
Indiana	25	45,630	10,486	13,760	826
Iowa	551	7,073	1,295	579	2,704
Michigan	115	23,242	2,996	11,716	146
Minnesota	8	5,707	1,407	369	40
New York	2,109	63,680	12,497	41,197	9,564
Ohio	.....	44,408	9,089	9,558	193,264
Pennsylvania	2,400	16,903	1,691	11,047	2,109
Tennessee	.....	6,045	5,995	76	.....
Wisconsin	96	29,342	6,340	6,403	8,854
All other states	2,998	18,108	4,406	11,151	6,687

Bituminous coal was the principal fuel used in the industry in 1914, 555,271 tons being reported in that year, of which the establishments in Illinois consumed over one-half. Illinois was also the principal consumer of coke and oil, while 82.5 per cent of the gas used was reported by Ohio. Very little anthracite coal was used in the industry in 1914.

SPECIAL STATISTICS RELATING TO PRODUCTS.

Products.—The value of the principal classes of products of the establishments engaged in the industry and the number of the principal kinds of implements manufactured are shown in the following table for the years 1914, 1909, 1904, and 1899.

Table 14

	1914	1909	1904	1899
Products, total value	[1] $164,086,835	[1] $146,329,268	[1] $112,007,344	$101,207,428
Plows and cultivators	38,662,037	36,784,477	30,607,960	
Planters and seeders	12,188,757	12,141,474	11,225,122	
Harvesting implements:				
Hayrakes and hay tedders	3,233,630			
Mowers and reapers	30,974,709	34,568,131	30,862,435	98,010,506
Other	5,372,947			
Seed separators:				
Thrashers	9,832,043	11,030,412	6,639,883	
Other	3,264,246			
All other agricultural implements, including parts	27,844,180	48,690,082	30,703,648	
All other products	31,277,021			
Amount received for repair work	1,437,265	3,114,692	1,968,296	3,196,922
Principal kinds of implements.				
Plows and cultivators:	*Number.*	*Number.*	*Number.*	*Number.*
Cultivators—				
Beet	2,184	3,172	3,459	2,008
Hand, garden, or garden plows	238,081	469,696	239,173	207,171
5-tooth, or horse hoes	254,158			
Wheeled—				
One row	347,329	435,429	313,088	295,799
Two row	31,605			
Cotton scrapers	17,537	20,180	22,519	15,230
Fertilizing machines	180,854	[2]	[2]	[2]
Harrows—				
Disk	209,077	193,000	104,323	97,261
Spring-tooth	187,370	112,832	86,408	380,259
Spike-tooth	368,219	394,988	262,442	
Land rollers	22,470	[2]	[2]	[2]
Listers	37,953	44,840	23,012	26,995
Plows—				
Disk	15,708	22,132	39,146	17,345
Gang	75,839	91,686	[2]	[2]
Shovel	181,550	254,737	121,899	102,320
Engine	3,265	2,355	1,599	207
Sulky (single)	108,232	134,936	138,899	136,105
Walking	870,414	1,110,006	956,898	819,022
Pulverizers	12,724	[2]	[2]	[2]
Other	80,096	[2]	[2]	[2]
Planters and seeders:				
Broadcast seeders	34,175	[4] 61,970	33,546	36,862
Corn planters—				
Hand	101,850	96,465	86,553	129,515
Horse	114,657	122,780	90,929	78,335
Principal kinds of implements—Continued.				
Planters and seeders—Contd.	*Number.*	*Number.*	*Number.*	*Number.*
Cotton planters	101,256	79,271	127,052	45,575
Potato planters	37,191	23,092	35,756	25,338
Drills—				
Corn	55,710	20,137	28,228	21,940
Grain	89,370	[5] 89,903	76,929	91,635
All other	10,688	32,507	606	5,302
Seed sowers, hand, field	12,608	7,847	59,910	83,283
Seed drills, hand, garden	43,113	[2]	[2]	[2]
Seeder attachments	10,000	[2]	[2]	[2]
Seeders, wagon or endgate	16,122	[2]	[2]	[2]
Other	4,124	[2]	[2]	[2]
Harvesting implements:				
Grain cradles	38,728	22,635	30,056	36,163
Harvesters—				
Bean	3,401	1,409	665	1,425
Corn	52,087	19,693	6,924	20,707
Grain	215,386	129,274	108,810	233,542
Harvesters and thrashers combined	270	543	[3]	[3]
Other	2,758	1,707	3,161	6,283
Hay carriers	44,277	45,064	85,121	54,303
Hayforks, horse	31,976	43,675	62,801	51,770
Hay loaders	25,865	34,705	27,174	7,273
Hayrakes—				
Sulky	139,565			
Sweep	23,304	266,260	236,297	216,345
Side delivery	20,213			
Haystackers	6,437	17,212	8,670	12,069
Hay tedders	9,796	34,396	35,745	14,510
Mowers	274,521	359,264	273,385	398,616
Other haying tools	37,706	[2]	[2]	[2]
Potato diggers, horse	25,758	25,632	11,703	[2]
Reapers	56,982	58,294	60,996	35,945
Other	13,746	[2]	[2]	[2]
Seed separators:				
Clover hullers	324	437	351	661
Corn huskers	341	318	1,327	10,726
Corn huskers and shredders	4,338	1,294	[2]	[2]
Corn shellers—				
Hand	63,206	74,223	47,189	106,381
Power	11,113	9,049	6,082	8,185
Fanning mills	23,047	33,805	22,994	30,369
Thrashers—				
Horsepower	302	822	2,237	1,314
Engine	13,246	12,957	7,950	3,651
Other	6,212	[2]	[2]	[2]

[1] In addition, agricultural implements to the value of $4,033,797 in 1914, $2,989,276 in 1909, and $1,249,679 in 1904, were made by establishments engaged primarily in the manufacture of products other than those covered by the industry designated.
[2] Not reported.
[3] Not reported separately.
[4] Includes 23,963 combination seeders.
[5] Includes 21,292 disk drills of all kinds.

In value, harvesting implements were the principal class of products reported for 1914, outranking plows and cultivators, which were first in importance in 1909. Harvesting implements represented 24.1 per cent of the total value of all products in 1914; plows and cultivators, 23.6 per cent; seed separators, 8 per cent; planters and seeders, 7.4 per cent; all other agricultural implements and parts, 17 per cent; all other products, 19.1 per cent; and repair work, nine-tenths of 1 per cent. The corresponding proportions in 1909 were: Harvesting implements, 23.6 per cent; plows and cultivators, 25.1 per cent; seed separators, 7.5 per cent; planters and seeders, 8.3 per cent; all other agricultural implements, including parts, and all other products, 33.3 per cent; and repair work, 2.1 per cent.

The item "all other products" includes all kinds of products that could not be classified as agricultural implements, such as engines, wagons, automobiles, dairy machinery, pumps, windmills, wheelbarrows, road scrapers, water tanks, etc. Of the $31,277,021 worth of all other products reported in 1914, engines amounted to $13,969,797; wagons, $1,551,092; and other products, $15,756,132.

In making comparisons of the number of the different kinds of implements reported at each census it should be remembered that each group includes a considerable variety of different sizes and types of implements. The item "broadcast seeders" includes in 1909, 23,963 seeders reported as "combination seeders," and in 1904 and 1899 includes such seeders as were reported under the heading "grain sowers." No doubt a considerable proportion of the seeders included in 1899, 1904, and 1909 under "broadcast seeders" were reported as "seeder attachments, or wagon or endgate seeders" in 1914. The figures shown for grain drills in 1909 include all types of disk drills, 21,292 of such drills being reported at that census. At the census of 1914, 1904, and 1899 disk drills were not reported separately, being included either as grain drills or under the heading "all other drills." Headers and combined headers and binders could not be shown separately, and have been included in the item "grain harvesters."

Table 15 shows, by states, the value reported for the four main groups of agricultural implements for the years 1914, 1909, and 1904. Comparative statistics are not available for 1899.

Illinois, the leading state in the manufacture of agricultural implements, ranked first in the production of harvesting implements, plows and cultivators, and planters and seeders. Wisconsin led in the output of seed separators in 1914, but the value could not be shown on account of disclosing the operations of individual establishments.

Over two-thirds of the harvesting implements and nearly one-half of the plows and cultivators produced in 1914 were manufactured in Illinois. The industry, although carried on to some extent in 39 states, is highly centralized in the North Central States—Illinois Wisconsin, Ohio, Indiana, and Michigan—which produced over 75.2 per cent of the total value of products reported for the industry in 1914. New York was also a large producer, reporting $14,576,694 worth of agricultural implements, or 8.9 per cent of the total for the industry. Harvesting implements were made in 30 states at the last census, plows and cultivators in 35, planters and seeders in 23, and seed separators in 20.

Table 15

PRODUCT AND STATE.	1914	1909	1904
Harvesting implements, value	$39,581,286	$34,568,131	$30,862,435
Illinois	27,177,513	22,417,070	16,874,413
New York	6,543,936	5,950,777	5,341,389
Ohio	2,573,726	2,675,727	3,193,853
Iowa	936,505	1,157,701	868,104
All other states	2,349,606	2,366,856	4,084,676
Plows and cultivators, value	38,662,037	36,784,477	30,607,960
Illinois	17,653,276	15,961,417	12,273,939
Ohio	4,627,191	3,062,194	3,031,384
Indiana	4,447,550	4,606,748	3,346,695
New York	3,176,951	3,348,203	2,545,947
Wisconsin	2,077,159	2,324,579	2,219,657
Kentucky	(1)	(1)	1,638,150
Pennsylvania	954,113	1,147,063	987,619
Iowa	922,599	438,837	497,435
All other states	4,803,198	5,895,436	4,067,134
Seed separators, value	13,096,289	11,030,412	6,639,883
Wisconsin	(1)	1,435,296	1,035,688
Illinois	2,183,640	1,847,026	915,095
Michigan	2,109,552	1,753,043	1,479,173
Indiana	(1)	2,748,913	718,575
Ohio	1,364,209	858,106	501,482
Minnesota	(1)	(1)	535,246
Pennsylvania	885,017	828,617	489,956
New York	491,586	790,494	461,814
All other states	6,062,285	768,917	502,854
Planters and seeders, value	12,188,757	12,141,474	11,225,122
Illinois	3,654,223	4,142,234	2,998,075
Ohio	(1)	2,245,512	2,016,919
Wisconsin	2,032,753	1,639,295	911,438
Indiana	(1)	1,499,639	694,047
Minnesota	(1)	(1)	272,876
New York	463,999	247,357	1,800,182
Michigan	445,450	640,001	1,004,734
All other states	5,592,332	1,727,436	1,526,851

1 Included in "all other states," to avoid disclosing the operations of individual establishments.

Imports and exports.—Table 16 shows the value of exports of agricultural implements for the fiscal years ending June 30, 1870, 1880, 1890, 1900, and for each succeeding year to 1914, inclusive. It also shows the value of imports for the years 1910 to 1914, inclusive. These figures were compiled from the Statistical Abstract of the United States, issued by the Bureau of Foreign and Domestic Commerce, Department of Commerce.

Table 16

YEAR ENDING JUNE 30—	Imports, total.	EXPORTS. Total.	Mowers and reapers.	Plows and cultivators.	Planters and seeders.	Thrashers.	All other implements, including parts.
1870	.....	$1,068,476	$65,533	$143,527	.....	.....	$859,416
1880	.....	2,245,742	768,945	169,211	.....	.....	1,307,586
1890	.....	3,859,184	2,092,638	878,784	.....	.....	887,762
1900	.....	16,099,149	11,243,763	2,178,098	.....	.....	2,677,288
1901	.....	16,313,434	9,943,680	1,888,373	.....	.....	4,481,381
1902	.....	16,286,740	8,818,370	2,791,092	.....	.....	4,677,278
1903	.....	21,006,622	10,326,641	3,169,961	.....	.....	7,510,020
1904	.....	22,749,635	11,568,062	3,537,810	.....	.....	7,643,763
1905	.....	20,721,741	10,559,891	2,892,060	.....	.....	7,269,790
1906	.....	24,554,427	12,150,101	4,128,331	.....	.....	8,275,995
1907	.....	26,936,456	15,078,231	3,492,073	.....	.....	8,366,152
1908	.....	24,344,398	13,750,434	3,139,496	.....	.....	7,454,468
1909	.....	25,694,184	14,052,083	3,795,800	.....	.....	7,846,301
1910	$42,682	28,124,033	11,281,719	6,239,466	.....	.....	10,602,848
1911	41,798	35,973,398	16,040,675	8,638,472	.....	.....	11,294,251
1912	66,805	35,640,005	16,994,386	7,212,118	$1,606,120	$4,253,417	5,573,964
1913	22,949	40,572,352	20,567,107	7,659,278	1,314,874	4,805,594	[1] 6,225,499
1914	262,061	31,965,789	18,655,363	5,265,926	865,642	2,519,276	[2] 4,656,582

[1] Includes hayrakes and tedders valued at $746,748 exported in 1913.

[2] Includes hayrakes and tedders valued at $410,121 exported in 1914.

DETAIL STATE TABLES.

Table 17 shows, for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products, as reported for the agricultural implements industry. Table 18 presents, for 1914, by states, the more detailed statistics of the industry.

TABLE 17.—COMPARATIVE SUMMARY, BY STATES: 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	601	48,459	121,428	$34,593	$73,509	$164,087
	1909	640	50,551	100,601	28,609	60,307	146,329
	1904	648	47,394	89,738	25,003	48,281	112,007
California	1914	28	704	1,533	566	900	1,962
	1909	25	622	1,186	451	1,441	2,670
	1904	25	479	583	349	724	1,484
Georgia	1914	18	577	1,516	230	845	1,501
	1909	17	552	1,307	190	583	1,117
	1904	16	584	939	171	602	1,040
Illinois	1914	73	19,556	50,044	15,668	32,878	65,338
	1909	79	19,240	38,040	11,718	24,824	57,268
	1904	82	15,359	34,934	8,851	17,751	38,412
Indiana	1914	33	3,991	10,892	2,556	3,487	12,791
	1909	39	4,749	9,254	2,565	4,864	13,670
	1904	41	3,543	3,831	1,841	2,975	8,061
Iowa	1914	34	1,164	2,459	794	2,052	5,216
	1909	42	1,318	2,554	683	2,171	4,757
	1904	30	1,027	1,741	470	1,357	2,692
Kansas	1914	11	64	233	40	154	315
	1909	18	126	434	74	162	369
	1904	7	105	255	52	205	395
Maine	1914	5	126	863	85	70	217
	1909	10	121	1,014	78	84	226
	1904	13	153	1,691	77	76	206
Massachusetts	1914	4	325	686	190	299	552
	1909	5	346	487	188	287	647
	1904	9	418	888	213	252	654
Michigan	1914	30	2,143	5,941	1,456	2,640	7,731
	1909	32	2,359	5,195	1,261	2,890	9,273
	1904	42	3,164	5,986	1,686	3,497	8,720
Minnesota	1914	17	872	2,489	707	1,474	3,813
	1909	17	1,014	1,468	632	1,090	3,014
	1904	21	1,176	2,527	637	1,090	2,885
Missouri	1914	18	240	742	142	270	570
	1909	25	438	1,080	219	504	981
	1904	21	525	856	261	452	1,068
New Hampshire	1914	3	21	129	$12	$14	$35
	1909	5	24	265	12	14	43
	1904	8	45	365	25	14	62
New Jersey	1914	9	270	518	178	445	991
	1909	10	224	724	112	327	755
	1904	10	204	403	90	118	392
New York	1914	50	5,292	11,774	3,428	7,073	14,577
	1909	57	5,717	10,744	3,270	6,415	14,971
	1904	75	6,279	12,019	3,241	5,678	13,046
North Carolina	1914	17	149	389	71	98	305
	1909	22	132	356	50	90	262
	1904	13	107	206	31	51	127
Ohio	1914	59	5,464	11,677	3,826	7,810	17,495
	1909	55	5,997	9,867	3,155	6,319	14,440
	1904	71	5,659	8,354	2,910	5,692	12,891
Pennsylvania	1914	38	2,018	4,472	1,121	1,907	4,844
	1909	36	2,401	3,842	1,223	2,082	4,805
	1904	43	2,394	3,230	1,103	2,075	5,017
South Carolina	1914	3	14	82	7	8	27
	1909	4	15	53	7	12	36
	1904	4	12	34	4	13	35
Tennessee	1914	17	517	1,450	253	391	1,122
	1909	16	645	1,236	268	413	1,004
	1904	12	612	692	216	314	769
Vermont	1914	9	311	1,245	182	310	696
	1909	11	360	1,194	185	272	582
	1904	10	247	666	114	182	442
Virginia	1914	20	269	539	122	168	484
	1909	16	272	503	117	244	516
	1904	11	314	383	116	182	404
Wisconsin	1914	46	3,143	9,196	2,198	8,676	20,119
	1909	45	2,704	7,301	1,505	3,937	11,411
	1904	52	3,569	6,966	1,886	3,520	10,077
All other states	1914	59	1,129	2,559	761	1,540	3,456
	1909	54	1,175	2,497	645	1,282	3,512
	1904	32	1,418	2,189	659	1,461	3,128

TABLE 18.—DETAIL STATISTICS FOR THE INDUSTRY, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc. Male.	Clerks, etc. Female.	Wage earners. Average number.	Wage earners. Number, 15th day of— Maximum month.	Wage earners. Number, 15th day of— Minimum month.
United States	601	58,118	431	1,656	6,384	1,188	48,459	Fe 61,900	Se 35,208
Alabama	8	37	8	4	.....	1	24	Fe [1] 39	Au [1] 10
California	28	955	28	48	137	38	704	Je 926	Se 564
Georgia	18	659	16	31	30	5	577	Ja 798	Je 407
Illinois	73	22,015	40	360	1,831	228	19,556	Ja 26,217	Se 12,338
Indiana	33	4,775	12	132	515	125	3,991	Fe 5,095	No 2,982
Iowa	34	1,650	43	76	231	136	1,164	Mh 1,332	Oc 889
Kansas	11	94	9	8	9	4	64	Fe 78	Jy 45
Maine	5	143	4	6	5	2	126	De 156	Jy 61
Massachusetts	4	359	.....	8	15	11	325	Mh 484	Au 175
Michigan	30	2,671	16	92	324	96	2,143	Mh 2,611	Se 1,338
Minnesota	17	1,165	10	41	205	37	872	Mh 1,104	No 414
Mississippi	5	44	3	6	2	1	32	Fe 57	No 7
Missouri	18	306	12	22	25	7	240	My 315	No 133
New Hampshire	3	26	3	2	.....	.....	21	Ja [1] 25	Au 11
New Jersey	9	367	10	17	56	14	270	Mh 353	Au 136
New York	50	6,166	31	165	470	108	5,392	Ja 7,423	Au 2,563
North Carolina	17	173	12	7	3	2	149	Fe 181	Oc 114
Ohio	59	6,543	27	194	724	134	5,464	Fe 6,793	No 4,132
Oregon	3	9	2	1	.....	.....	6	Jy [1] 9	Oc [1] 5
Pennsylvania	38	2,395	34	50	228	65	2,018	Mh 2,205	No 1,714
South Carolina	3	23	2	4	3	.....	14	Ja 27	Se [1] 6
Tennessee	17	582	14	18	23	10	517	Ja 621	No 464
Vermont	9	352	5	15	15	6	311	Ja 336	Jy 238
Virginia	20	318	18	16	10	5	269	Fe 321	No 243
Washington	7	155	3	10	6	2	134	Je 174	No 61
Wisconsin	46	4,885	37	275	1,320	110	3,143	Ja 4,643	Se 1,918
All other states [2]	36	1,251	32	48	197	41	933	.....	.....

STATE.	WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY. Total.	16 and over. Male.	16 and over. Female.	Under 16. Male.	Under 16. Female.	Capital.	EXPENSES. Salaries and wages. Officials.	Salaries and wages. Clerks, etc.
United States	49,608	49,019	505	84	.....	$338,531,673	$4,503,608	$8,506,857
Alabama	45	45	.....	.....	.....	115,750	2,820	600
California	883	878	2	3	.....	1,626,547	115,438	174,178
Georgia	613	594	.....	19	.....	1,801,169	64,671	32,274
Illinois	19,689	19,478	201	10	.....	153,599,239	1,276,837	2,357,118
Indiana	4,125	4,033	89	3	.....	19,560,849	423,778	811,006
Iowa	1,200	1,197	1	2	.....	6,629,519	200,809	331,864
Kansas	78	78	.....	.....	.....	303,759	13,469	9,309
Maine	156	153	3	.....	.....	414,041	9,100	10,745
Massachusetts	271	271	.....	.....	.....	835,645	21,934	33,792
Michigan	1,881	1,873	.....	8	.....	13,150,786	212,821	404,324
Minnesota	936	936	.....	.....	.....	7,501,038	116,963	275,604
Mississippi	46	46	.....	.....	.....	138,987	7,025	1,320
Missouri	292	287	.....	5	.....	1,347,799	38,425	31,253
New Hampshire	25	25	.....	.....	.....	43,022	1,100	.....
New Jersey	248	248	.....	.....	.....	1,663,645	37,474	65,661
New York	5,938	5,859	74	5	.....	29,764,024	400,135	622,091
North Carolina	141	141	.....	.....	.....	385,442	30,310	4,060
Ohio	5,621	5,589	23	9	.....	31,524,254	497,852	816,868
Oregon	8	8	.....	.....	.....	30,805	1,200	.....
Pennsylvania	1,812	1,799	.....	13	.....	10,594,938	143,443	302,562
South Carolina	25	25	.....	.....	.....	75,377	3,000	1,600
Tennessee	539	537	2	.....	.....	1,727,111	48,410	40,293
Vermont	324	316	8	.....	.....	1,059,345	31,504	14,445
Virginia	252	250	.....	2	.....	561,896	24,526	10,733
Washington	145	145	.....	.....	.....	515,112	15,502	9,873
Wisconsin	3,295	3,199	93	3	.....	48,077,980	656,901	1,351,546
All other states [2]	1,020	1,009	9	2	.....	5,483,594	108,161	293,738

STATE.	EXPENSES—continued. Salaries and wages—Continued. Wage earners.	For contract work.	Rent and taxes. Rent of factory.	Rent and taxes. Taxes, including internal revenue and corporation income.	For materials. Principal materials.	For materials. Fuel and rent of power.	Value of products.	Value added by manufacture.	POWER. Primary horsepower. Total.	Steam engines. [3]	Internal-combustion engines. [4]	Water wheels and motors. [3]	Electric (rented).	Electric horsepower generated in establishments reporting.
United States	$34,593,325	$104,488	$91,358	$1,622,851	$71,001,251	$2,507,394	$164,086,835	$90,578,190	121,428	79,688	5,285	5,691	30,764	52,353
Alabama	10,406	.....	100	365	11,922	2,169	45,685	31,594	179	80	59	30	10	.....
California	566,099	600	5,105	27,109	866,350	33,958	1,962,235	1,061,927	1,533	242	182	.....	1,109	.....
Georgia	230,384	479	1,195	14,961	824,330	20,499	1,501,347	656,518	1,516	1,131	43	.....	342	681
Illinois	15,668,157	41,868	20,606	649,647	31,825,057	1,052,504	65,337,663	32,460,102	50,044	35,860	447	1,143	12,594	23,609
Indiana	2,555,757	1,570	2,940	148,141	3,300,739	135,926	12,791,461	9,304,796	10,892	7,820	141	1,515	1,416	7,198
Iowa	794,195	935	1,920	40,103	1,988,874	62,960	5,216,245	3,164,411	2,459	852	212	.....	1,395	370
Kansas	40,493	.....	515	2,554	151,027	2,473	314,704	161,204	233	.....	99	.....	134	.....
Maine	84,571	2,224	1,250	1,958	58,539	11,806	216,910	146,565	863	25	12	536	290	85
Massachusetts	190,228	.....	6,600	3,374	287,353	11,170	552,381	253,858	686	155	25	75	431	.....
Michigan	1,456,438	25	3,084	98,357	2,530,301	109,657	7,731,217	5,091,259	5,941	2,856	151	.....	2,934	795
Minnesota	707,478	13,216	2,113	28,744	1,441,839	31,671	3,812,728	2,339,218	2,489	415	29	.....	2,045	427
Mississippi	14,476	.....	96	774	20,151	924	50,638	29,563	97	75	22	.....	.....	133
Missouri	142,233	14,710	3,160	4,652	259,050	11,027	569,904	299,827	742	490	134	.....	118	80
New Hampshire	12,314	.....	600	293	12,882	997	35,362	21,483	129	30	14	85	.....	.....
New Jersey	178,462	1,000	820	3,475	437,005	8,389	930,724	485,330	518	135	288	70	25	400
New York	3,427,737	9,059	5,238	128,046	6,730,298	342,907	14,576,694	7,503,489	11,774	7,876	239	1,532	2,127	5,179
North Carolina	71,178	1,280	483	5,407	91,197	7,071	305,108	206,840	389	112	100	.....	177	25
Ohio	3,826,047	3,981	17,995	164,932	7,584,246	225,539	17,484,615	9,674,830	11,677	7,796	2,147	15	1,719	5,716
Oregon	5,410	.....	400	378	8,725	681	29,447	20,041	28	.....	.....	.....	28	.....
Pennsylvania	1,121,427	240	1,392	26,551	1,801,404	105,890	4,843,655	2,936,361	4,472	2,985	172	79	1,236	1,501
South Carolina	6,706	.....	.....	154	8,027	439	26,744	18,278	82	12	10	.....	60	.....
Tennessee	252,616	.....	.....	13,782	365,044	26,038	1,121,694	730,612	1,450	810	27	.....	613	40
Vermont	182,488	12,293	209	6,115	278,547	31,620	696,294	386,127	1,245	285	25	410	525	.....
Virginia	121,664	.....	4,830	2,963	155,987	11,929	484,240	316,324	539	286	67	20	166	.....
Washington	115,444	.....	735	1,155	177,003	7,330	392,053	207,630	202	.....	.....	.....	202	.....
Wisconsin	2,198,371	.....	6,697	217,549	8,510,229	165,405	20,119,058	11,443,424	9,196	8,120	334	.....	742	4,843
All other states [2]	612,546	1,008	3,275	26,312	1,275,035	36,415	2,938,029	1,626,579	2,053	1,240	306	181	326	1,271

[1] Same number reported for one or more other months.
[2] All other states embrace: Arkansas, 2 establishments; Colorado, 3; Connecticut, 4; Florida, 2; Idaho, 2; Kentucky, 7; Louisiana, 1; Maryland, 2; Nebraska, 4; Oklahoma, 2; South Dakota, 2; Texas, 4; West Virginia, 1.
[3] Owned power only.
[4] Includes rented power, other than electric.

BRASS, BRONZE, AND COPPER PRODUCTS.

By HARRY B. COHEN.

SUMMARY AND ANALYSIS.

Scope of the industry: 1914.—This report presents statistics for the manufacture of brass and bronze (alloys consisting chiefly or solely of copper and zinc and of copper and tin), copper and German silver products, and aluminum castings. It does not include the manufacture of bells, hardware, and plumbers' supplies, but statistics for these and similar products are given in the general report on manufactures under the classification of "bells;" "gas and electric fixtures;" "hardware;" "hardware, saddlery;" "lamps and reflectors;" and "plumbers' supplies, not elsewhere specified."

Table 1 summarizes the more important data for establishments engaged primarily in the manufacture of brass, bronze, and copper products for 1914, and gives separate figures for (1) brass and bronze products, (2) copper products, and (3) products of other metals or alloys.

Table 1

	Total for the industry; 1914.	Establishments manufacturing principally—		
		Brass and bronze products.	Copper products.	Other metal products.[1]
Number of establishments	992	904	41	47
Persons engaged	45,657	37,627	5,666	2,364
Proprietors and firm members	791	727	33	31
Salaried employees	4,560	3,692	586	282
Wage earners (average number)	40,306	33,208	5,047	2,051
Primary horsepower	122,700	88,746	29,066	4,888
Capital	$116,092,882	$95,827,707	$14,966,130	$5,299,045
Salaries and wages	32,158,279	26,415,962	3,817,892	1,924,425
Salaries	7,073,998	5,740,211	873,505	460,282
Wages	25,084,281	20,675,751	2,944,387	1,464,143
Paid for contract work	111,021	101,633	7,412	1,976
Rent and taxes (including internal revenue)	1,381,624	1,145,251	170,475	65,898
Cost of materials	115,486,768	85,130,678	25,317,240	5,038,850
Value of products	[2]162,199,019	[2]123,580,434	[2]30,722,895	[2]7,895,690
Value added by manufacture (value of products less cost of materials)	46,712,251	38,449,756	5,405,655	2,856,840

[1] Includes chiefly establishments manufacturing German silver and gun metal products and aluminum castings.

[2] In addition, brass, bronze, and copper products, valued at $69,063,735, were manufactured by establishments engaged primarily in other industries in 1914. These additional products were distributed as follows: Brass and bronze, $7,923,290; copper, $52,118,351; and "other metal products," $9,022,094.

The totals shown in the table represent the establishments grouped according to their product of chief value. The group "other metal products" includes establishments that manufacture chiefly German silver and gun metal products and aluminum castings. Reports were received from 992 establishments engaged in the industry in 1914, of which 904 manufactured chiefly brass and bronze products, reporting over four-fifths of the total average number of wage earners and slightly more than three-fourths of the total value of products.

The total value of products for the industry includes a large amount of duplication, due to the fact that a large part of the ingots, bars, plates, sheets, rods, etc., reported as products by some establishments, are utilized as materials by others in further manufacture.

The statistics do not cover the output of brass, bronze, and copper products made by establishments classified under other industries, or the manufacture of brass, copper, or German silver wire by establishments chiefly engaged in drawing the wire from purchased rods, by wire departments of steel works or rolling mills, or by manufacturers of electrical machinery (who also draw this class of wire). Establishments of this character reported for 1914 products valued at $69,063,735, as presented in detail in Table 14, and, in addition establishments engaged chiefly in the manufacture of bells had products valued at $969,625. Large amounts of brass, bronze, and copper products were also manufactured in establishments classified as "hardware;" "hardware, saddlery;" "engines, steam, gas, and water;" "automobile bodies and parts;" "plumbers' supplies, not elsewhere specified;" "lamps and reflectors;" "electrical machinery, apparatus, and supplies;" etc., and are included in the figures for those industries.

Comparison with earlier censuses.—Table 2 summarizes the more important statistics of establishments engaged primarily in the manufacture of brass, bronze, and copper products, for each census from 1869 to 1914, and gives percentages of increase from census to census.

For 1909 statistics for the industry were presented in one group as "brass and bronze products" with five subclassifications; while in 1904, 1899, and 1889, they were shown as five separate industries—"brass and copper, rolled;" "brass castings and brass finishing;" "brass ware;" "bronze castings;" and "brass" which consisted of brass from scrap metal and shapes for manufacture. For 1879 the same industries were shown, with the exception of brass from scrap metal, which was not reported separately. For 1869 "brass and copper, rolled" was divided into three industries—"brass and copper tubing," "brass, rolled," and "cop-

per, rolled." The designations employed for the group of brass industries at the census of 1859 were "brass and bell founding;" "brass and copper tubing;" "brass and German silver, rolled;" "brass book clasps and badges;" "brass founding and brass ware;" "brass ornaments;" "brass wire and wire cloth;" "copper and brass ware;" "copper mining;" "copper, rolled;" "copper, sheet and bolt;" "copper smelting;" and "copper work." At the census of 1849 only "brass foundries" and "copper and brass" were shown.

During the period from 1909 to 1914 there was a slight decrease in the number of establishments, number of proprietors and firm members, average number of wage earners, amount paid for contract work, and value added by manufacture, but during the preceding census periods the industry developed constantly.

Table 2

	NUMBER OR AMOUNT.							PER CENT OF INCREASE.[1]					
	1914	1909	1904	1899	1889	1879	1869	1909–1914	1904–1909	1899–1904	1889–1899	1879–1889	1869–1879
Number of establishments	992	1,021	813	695	610	449	335	−2.8	25.6	17.0	13.9	35.9	34.0
Persons engaged	45,657	45,441	36,952	(2)	(2)	(2)	(2)	0.5	23.0	.....	.....	.....	.....
Proprietors and firm members	791	828	784	(2)	(2)	(2)	(2)	−4.5	5.6	.....	.....	.....	.....
Salaried employees	4,560	3,995	3,000	1,813	(2)	(2)	(2)	14.1	33.2	65.5	.....	.....	.....
Wage earners (average number)	40,306	40,618	33,168	27,166	21,849	12,614	5,156	−0.8	22.5	22.1	24.3	73.2	144.6
Primary horsepower	122,700	106,120	69,494	47,257	27,571	(2)	5,442	15.6	52.7	47.1	71.4	.....	.....
Capital	$116,092,882	$109,319,224	$77,438,177	$51,120,156	$39,489,689	$15,578,919	$8,941,485	6.2	41.2	51.5	29.5	153.5	74.2
Salaries and wages	32,158,279	29,217,281	21,443,783	15,896,109	11,292,540	5,729,365	2,706,821	10.1	36.3	34.9	40.8	97.1	111.7
Salaries	7,073,998	5,539,898	3,777,697	2,296,668	(2)	(2)	(2)	27.7	46.6	64.5	.....	.....	.....
Wages	25,084,281	23,677,383	17,666,086	13,599,441	(2)	(2)	(2)	5.9	34.0	29.9	.....	.....	.....
Paid for contract work	111,021	123,001	73,820	(2)	(2)	(2)	(2)	−9.7	66.6	.....	.....	.....	.....
Rent and taxes (including internal revenue)	1,381,624	956,864	[3] 729,768	(2)	(2)	(2)	(2)	44.4	.....	.....	.....	.....	.....
Cost of materials	115,486,768	99,228,412	65,653,330	61,189,324	27,293,130	16,864,197	7,093,242	16.4	51.1	7.3	124.2	61.8	137.8
Value of products	[4] 162,199,019	149,989,058	102,407,104	88,653,987	50,056,101	27,332,483	13,130,595	8.1	46.5	15.5	77.1	83.1	108.1
Value added by manufacture (value of products less cost of materials)	46,712,251	50,760,646	36,753,774	27,464,663	22,762,971	10,468,286	6,037,353	−8.0	38.1	33.8	20.7	117.4	73.4

[1] A minus sign (−) denotes decrease.
[2] Figures not available.
[3] Exclusive of internal revenue.
[4] In addition, brass, bronze, and copper products, to the value of $69,063,735, were manufactured by establishments engaged primarily in other industries.

Summary, by states.—Table 3 summarizes the more important statistics of the industry, by states, the states being arranged according to the value of products reported for 1914.

Some of the states for which data can not be shown separately without disclosing the operations of individual establishments ranked higher than some of those named in the table.

Table 3

STATE.	Number of establishments.	CENSUS OF 1914. Wage earners. Average number.	Per cent distribution.	Rank, 1914.	Value of products. Amount.	Per cent distribution.	Rank, 1914.	Value added by manufacture. Amount.	Per cent distribution.	Rank, 1914.	PER CENT OF INCREASE.[1] Wage earners (average number). 1909–1914	1904–1909	Value of products. 1909–1914	1904–1909	Value added by manufacture. 1909–1914	1904–1909
United States	992	40,306	100.0	.....	$162,199,019	100.0	.....	$46,712,251	100.0	.....	−0.8	22.5	8.1	46.5	−8.0	38.1
Connecticut	67	16,781	41.6	1	69,353,103	42.7	1	15,467,331	33.1	1	−0.2	9.3	3.6	24.1	−18.9	19.2
New York	228	6,627	16.4	2	23,964,582	14.8	2	8,749,789	18.7	2	−0.4	71.3	8.0	175.7	−3.3	116.5
Michigan	64	4,731	11.7	3	16,868,725	10.4	3	5,395,258	11.5	3	−0.8	135.1	21.4	275.9	10.2	145.8
Pennsylvania	107	1,940	4.8	5	9,779,626	6.0	4	2,656,413	5.7	5	−6.7	22.7	15.7	55.3	−6.8	31.2
Ohio	84	2,277	5.7	4	7,843,092	4.8	5	3,653,547	7.8	4	2.0	50.3	19.3	96.4	20.2	68.6
Illinois	75	1,502	3.7	7	7,570,456	4.7	6	2,330,045	5.0	6	−11.0	5.2	10.6	44.0	−13.5	13.2
Massachusetts	73	1,620	4.0	6	5,958,863	3.7	7	2,244,067	4.8	7	−9.5	14.9	−1.4	79.7	−5.7	43.3
Wisconsin	30	1,122	2.8	9	5,409,260	3.3	8	1,014,272	2.2	9	−13.0	155.2	0.4	389.7	−45.9	278.4
New Jersey	61	1,236	3.1	8	4,686,427	2.9	9	1,511,562	3.3	8	−2.3	16.9	−8.7	36.7	−14.9	26.9
Missouri	18	383	1.0	12	3,047,306	1.9	10	608,864	1.3	11	29.0	51.5	37.2	45.4	7.4	65.3
Indiana	21	562	1.4	10	1,560,897	1.0	11	758,661	1.6	10	20.1	363.4	13.2	688.0	25.5	.....
Maryland	15	392	1.0	11	1,173,364	0.7	12	420,127	0.9	13	79.0	104.7	56.8	135.2	32.9	132.4
California	36	247	0.6	13	951,309	0.6	13	464,103	1.0	12	26.7	−49.7	40.1	−27.8	20.8	−38.0
Rhode Island	19	123	0.3	14	576,617	0.4	14	366,733	0.8	14	−45.3	−25.2	−30.3	24.0	31.5	−14.4
Texas	7	91	0.2	17	494,763	0.3	17	143,637	0.3	15	−18.8	.....	−4.4	.....	−31.1	.....
Minnesota	9	99	0.2	16	358,643	0.2	19	116,675	0.2	16	.....	.....	158.3	.....	.....	.....
West Virginia	4	49	0.1	20	192,986	0.1	20	89,967	0.2	19	.....	.....	.....	91.1	.....	.....
Washington	11	45	0.1	22	179,794	0.1	21	95,936	0.2	18	.....	.....	32.4	.....	.....	.....
Oregon	6	35	0.1	24	139,647	0.1	22	80,389	0.2	21	.....	.....	14.8	.....	.....	.....
Kentucky	9	59	0.1	18	137,407	0.1	23	64,799	0.1	22	.....	.....	.....	−49.6	.....	.....
Colorado	7	36	0.1	23	100,991	0.1	24	47,213	0.1	25	.....	.....	−30.3	.....	.....	.....
New Hampshire	5	53	0.1	19	99,384	0.1	25	49,615	0.1	24	.....	.....	−2.9	−36.6	.....	.....
Maine	5	31	0.1	27	84,119	0.1	26	41,806	0.1	26	.....	.....	.....	−88.5	.....	.....
Utah	3	2	(2)	34	10,020	(2)	35	5,312	(2)	34	.....	.....	.....	.....	.....	.....
All other states	28	263	0.7	.....	1,657,638	1.0	.....	336,130	0.7	.....	.....	.....	.....	.....	.....	.....

[1] Percentages are based on figures in Table 15; a minus sign (−) denotes decrease; percentages are omitted where base is less than 100 for wage earners or less than $100,000 for value of products or value added by manufacture, or where comparable figures can not be given.
[2] Less than one-tenth of 1 per cent.

Separate figures are given for 24 states, and the statistics for 12 other states in 1914 are combined in the total for "all other states" in order to avoid disclosing the operations of individual establishments.

Connecticut is the leading state in the industry, ranking first in each item shown for 1914 and 1909. At the 1914 census, the establishments in Connecticut reported more than two-fifths of the average number of wage earners and value of products for the industry in the United States, and nearly one-third of the value added by manufacture. The average number of wage earners reported for the state was slightly less than in 1909, and, while the value of products was 3.6 per cent greater for 1914, approximately two-thirds of the wage earners, value of products, and value added by manufacture were reported from the three states—Connecticut, New York, and Michigan—which ranked first, second, and third, respectively.

Persons engaged in the industry.—Table 4 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, the average number of wage earners being distributed also by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained in the method described in the "Explanation of terms."

Table 4

CLASS.	Census year.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Male.	Female.	Per cent of total. Male.	Female.
All classes	1914	45,657	42,280	3,377	92.6	7.4
	1909	45,441	42,153	3,288	92.8	7.2
Proprietors and officials	1914	2,146	2,096	50	97.7	2.3
	1909	2,160	2,120	40	98.1	1.9
Proprietors and firm members	1914	791	766	25	96.8	3.2
	1909	828	799	29	96.5	3.5
Salaried officers of corporations	1914	642	622	20	96.9	3.1
	1909	584	575	9	98.5	1.5
Superintendents and managers	1914	713	708	5	99.3	0.7
	1909	748	746	2	99.7	0.3
Clerks and other subordinate salaried employees.	1914	3,205	2,443	762	76.2	23.8
	1909	2,663	1,972	691	74.1	25.9
Wage earners (average number)	1914	40,306	37,741	2,565	93.6	6.4
	1909	40,618	38,061	2,557	93.7	6.3
16 years of age and over	1914	40,043	37,532	2,511	93.7	6.3
	1909	40,136	37,681	2,455	93.9	6.1
Under 16 years of age	1914	263	209	54	79.5	20.5
	1909	482	380	102	78.8	21.2

Table 5 gives, for the several classes of persons engaged in the industry, the percentages of increase from 1909 to 1914 and the per cent distribution at the two censuses.

Table 5

CLASS.	PERSONS ENGAGED IN THE INDUSTRY. Per cent of increase,[1] 1909–1914. Total.	Male.	Female.	Per cent distribution. Total. 1914	Total. 1909	Male. 1914	Male. 1909	Female. 1914	Female. 1909
All classes	0.5	0.3	2.7	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials	−0.6	−1.1	.....	4.7	4.8	5.0	5.0	1.5	1.2
Proprietors and firm members	−4.5	−4.1	.....	1.7	1.8	1.8	1.9	0.7	0.9
Salaried officers of corporations	9.9	8.2	.....	1.4	1.3	1.5	1.4	0.6	0.3
Superintendents and managers	−4.7	−5.1	.....	1.6	1.6	1.7	1.8	0.1	0.1
Clerks and other subordinate salaried employees	20.4	23.9	10.3	7.0	5.9	5.8	4.7	22.6	21.0
Wage earners (average number)	−0.8	−0.8	0.3	88.3	89.4	89.3	90.3	76.0	77.8
16 years of age and over	−0.2	−0.4	2.3	87.7	88.3	88.8	89.4	74.4	74.7
Under 16 years of age	−45.4	−45.0	−47.1	0.6	1.1	0.5	0.9	1.6	3.1

[1] A minus sign (−) denotes decrease; percentages are omitted where base is less than 100.

Of the 45,657 persons engaged in the industry in 1914, 92.6 per cent were males and 7.4 per cent females; 4.7 per cent were proprietors and officials, 7 per cent clerks and other subordinate salaried employees, and 88.3 per cent were wage earners.

Comparatively little change took place during the period 1909–1914 in the number of persons engaged in the industry and their distribution among the various classes shown in the table. Decreases were shown for average number of wage earners employed, both over and under 16 years of age, proprietors and firm members, and superintendents and managers. Increases were shown for the total, "all classes," for salaried officers of corporations, and for clerks and other subordinate salaried employees. Both the increases and decreases were proportionately small, in some cases being almost negligible. The largest proportional increase is shown for clerks and other salaried employees, the number of such employees being a little more than one-fifth greater in 1914 than in 1909, and the largest decrease was in average number of wage earners under 16 years of age, the number shown for this class in 1914 being only a little more than one-half as large as in 1909.

Wage earners employed, by months.—The following table gives for the industry the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

Table 6

MONTH.	WAGE EARNERS IN THE INDUSTRY. Number.[1]			Per cent of maximum.		
	1914	1909	1904	1914	1909	1904
January	39,531	37,948	32,422	94.2	83.2	92.8
February	40,402	38,496	33,368	96.3	84.4	95.5
March	41,714	38,657	33,512	99.4	84.7	95.9
April	41,971	38,348	33,298	100.0	84.1	95.3
May	41,706	38,565	32,832	99.4	84.5	93.9
June	40,873	38,957	32,203	97.4	85.4	92.1
July	40,407	39,808	31,846	96.3	87.3	91.1
August	39,685	40,930	32,118	94.6	89.7	91.9
September	39,920	42,081	32,945	95.1	92.3	94.3
October	39,315	43,541	33,780	93.7	95.5	96.7
November	38,789	44,431	34,743	92.4	97.4	99.4
December	39,359	45,615	34,949	93.8	100.0	100.0

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904, the average number employed during the month.

Regularity of employment in the industry is indicated by the fact that in 1914 the minimum number of wage earners represented 92.4 per cent of the maximum, while in 1909 and 1904 the respective figures were 83.2 per cent and 91.1 per cent. April was the month of maximum employment of wage earners in 1914, and December in 1909 and 1904, while the minimum number was reported for November in 1914, January in 1909, and July in 1904.

Table 7 gives the total average number of wage earners employed during 1914, together with the total number employed on the 15th of each month, or the nearest representative day, for the United States as a whole, and for each state in which the average number of wage earners was 500 or more.

The stability of employment in the industry for the country as a whole was reflected in the states shown in the table, and in only a few states was the variation considerably greater than the corresponding figure for the United States. The months of maximum and minimum employment varied greatly in the several states, only 3 of the 10 states shown having the maximum number reported for April, the maximum month for the entire country; and only 4 states having the minimum reported for November, the minimum month for the United States as a whole. The percentage which the minimum represented of the maximum ranged from 70.2 per cent in Indiana to 93.8 in Massachusetts.

Table 7

WAGE EARNERS: 1914.
[Month of maximum employment for each state is indicated by **boldface** figures and that of minimum by *italic* figures.]

STATE.	Average number employed during year.	Number employed on 15th day of the month or nearest representative day.											Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States	40,306	39,531	40,402	41,714	**41,971**	41,706	40,873	40,407	39,685	39,920	39,315	*38,789*	39,359	92.4
Connecticut	16,781	16,654	16,960	17,455	17,209	16,978	16,790	16,775	16,574	16,630	16,232	*16,218*	16,897	92.9
Illinois	1,502	1,469	1,541	1,568	1,614	**1,663**	1,581	1,563	1,500	1,487	1,480	*1,477*	1,381	70.8
Indiana	562	528	598	**662**	635	603	568	553	553	554	523	502	*465*	70.2
Massachusetts	1,620	1,631	1,595	1,646	1,654	1,601	1,592	1,603	*1,582*	**1,666**	1,647	1,637	1,606	93.8
Michigan	4,731	4,485	4,531	**4,986**	4,939	4,924	4,760	4,667	4,675	4,959	4,776	4,649	*4,421*	88.7
New Jersey	1,236	1,232	1,248	1,284	**1,320**	1,280	1,216	1,231	1,239	1,252	1,213	1,164	*1,153*	87.3
New York	6,627	6,480	6,665	6,647	6,868	**7,028**	6,911	6,717	6,363	*6,282*	6,460	6,576	6,527	89.4
Ohio	2,277	2,156	2,355	2,408	**2,573**	2,448	2,378	2,216	2,218	2,238	2,134	*2,096*	2,104	81.5
Pennsylvania	1,940	1,987	1,972	**1,999**	1,976	1,990	1,952	1,945	1,915	1,876	1,884	*1,864*	1,920	93.2
Wisconsin	1,122	*1,040*	1,109	1,169	**1,210**	1,167	1,158	1,147	1,125	1,081	1,094	1,081	1,083	86.0

Prevailing hours of labor.—In Table 8 the average number of wage earners reported for 1914 and 1909 for the industry has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment was classified as a total, even though a few employees worked a greater or smaller number of hours.

A marked tendency toward a shorter working day is shown for the United States as a whole and for most of the states in which the industry is carried on. In 1909, 9,705, or nearly one-fourth of the average number of wage earners, were employed in establishments where the prevailing hours of labor were 60 or more per week, whereas only 6,829, or about one-sixth, were so employed in 1914. On the other hand, the number of wage earners in establishments where the prevailing hours were fewer than 54 per week increased from 1,714, or 4.2 per cent of the total for the industry in 1909, to 8,531, or 21.2 per cent of the total, in 1914.

Table 8

STATE.	Census year.	AVERAGE NUMBER OF WAGE EARNERS. Total.	In establishments where the prevailing hours of labor per week were— 48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72.
United States	1914	40,306	1,851	6,680	7,545	17,401	6,669	160	....
	1909	40,618	458	1,256	6,397	22,802	9,542	132	31
Connecticut	1914	16,781	64	4,143	358	9,328	2,888	.....	....
	1909	16,817	24	198	323	13,441	2,831	.....	....
Illinois	1914	1,502	80	169	819	323	111	.....	....
	1909	1,688	15	77	1,202	203	186	5	....
Indiana	1914	562	13	219	26	237	67	.....	....
	1909	468	1	7	24	153	283	.....	....
Massachusetts	1914	1,620	3	111	453	470	583	.....	....
	1909	1,791	40	55	492	664	540	.....	....
Michigan	1914	4,731	14	143	1,360	1,977	1,237	.....	....
	1909	4,771	.....	35	102	2,332	2,302	.....	....
New Jersey	1914	1,236	22	113	276	800	25	.....	....
	1909	1,265	12	93	284	640	205	.....	31
New York	1914	6,627	743	865	2,180	1,365	1,474	.....	....
	1909	6,651	230	487	2,049	1,701	2,184	.....	....
Ohio	1914	2,277	484	422	543	651	75	102	....
	1909	2,232	30	36	831	1,114	94	127	....
Pennsylvania	1914	1,940	52	159	721	944	64	.....	....
	1909	2,080	36	44	493	1,396	111	.....	....
Wisconsin	1914	1,122	143	44	51	881	3	.....	....
	1909	1,289	3	.....	28	838	420	.....	....

In Connecticut over one-fourth of the wage earners were employed in establishments where the prevailing hours were less than 54 per week in 1914, as compared with less than 2 per cent in 1909.

Character of ownership.—Table 9 presents statistics concerning the character of ownership, or legal organization, of establishments engaged in the industry for 1914 and 1909 for the United States, and for 1914 for each state reporting an average of 500 wage earners or more.

Table 9

STATE	NUMBER OF ESTABLISHMENTS OWNED BY—			AVERAGE NUMBER OF WAGE EARNERS.						VALUE OF PRODUCTS.						
				Total.	In establishments owned by—			Per cent of total.			Total.	Of establishments owned by—			Per cent of total.		
	Individuals.	Corporations.	All others.		Individuals.	Corporations.	All others	Individuals.	Corporations.	All others		Individuals.	Corporations.	All others.	Individuals.	Corporations.	All others
United States:																	
1914	396	412	184	40,306	3,028	35,505	1,773	7.5	88.1	4.4	$162,199,019	$9,102,410	$146,925,064	$6,171,545	5.6	90.6	3.8
1909	415	417	189	40,618	2,821	35,574	2,223	6.9	87.6	5.5	149,989,058	8,288,085	134,981,702	6,719,271	5.5	90.0	4.5
Connecticut	18	42	7	16,781	341	16,385	55	2.0	97.6	0.3	69,353,103	952,446	68,258,140	142,517	1.4	98.4	0.2
Illinois	23	39	13	1,502	117	1,265	120	7.8	84.2	8.0	7,570,456	354,258	6,795,359	420,839	4.7	89.8	5.6
Indiana	6	12	3	562	[1] 46	516	.....	8.2	91.8	.....	1,560,897	[1] 124,456	1,436,441	.....	8.0	92.0	.....
Massachusetts	36	23	14	1,620	179	1,321	120	11.0	81.5	7.4	5,958,863	493,440	5,102,825	362,598	8.3	85.6	6.1
Michigan	14	40	10	4,731	187	4,492	52	4.0	94.9	1.1	16,868,725	607,450	15,928,399	332,876	3.6	94.4	2.0
New Jersey	25	22	14	1,236	161	961	114	13.0	77.8	9.2	4,686,427	605,657	3,753,647	327,123	12.9	80.1	7.0
New York	99	73	56	6,627	1,110	4,781	736	16.7	72.1	11.1	23,964,582	2,669,315	18,924,247	2,371,020	11.1	79.0	9.9
Ohio	28	42	14	2,277	197	1,922	158	8.7	84.4	6.9	7,843,092	532,955	6,894,127	416,010	6.8	87.9	5.3
Pennsylvania	53	37	17	1,940	451	1,285	204	23.2	66.2	10.5	9,779,626	1,876,018	6,885,836	1,017,772	19.2	70.4	10.4
Wisconsin	9	17	4	1,122	18	1,080	24	1.6	96.3	2.1	5,409,260	94,261	5,186,590	128,409	1.7	95.9	2.4

[1] Includes the group "all others."

The percentage of establishments operated by corporations increased from 40.8 per cent in 1909 to 41.5 in 1914. In 1914 corporations gave employment to 88.1 per cent of the wage earners, and their products formed 90.6 per cent of the total for the industry, as compared with 87.6 per cent and 90 per cent, respectively, in 1909.

The establishments under corporate ownership constituted a majority in about one-half of the states for which separate figures are shown in the table, and employed the majority of the wage earners in all the states and (with the exception of Pennsylvania, for which the percentage was 70.4) reported more than three-fourths of the total value of products.

Size of establishments.—The tendency of the industry to become concentrated in large establishments is indicated by the statistics given in Table 10.

Table 10

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
Total	1914	992	40,306	$162,199,019	$46,712,251
	1909	1,021	40,618	149,989,058	50,760,646
Less than $5,000	1914	214	200	562,539	326,043
	1909	196	238	537,452	291,426
$5,000 to $20,000	1914	296	1,263	3,338,002	1,753,573
	1909	326	1,415	3,626,877	1,879,185
$20,000 to $100,000	1914	309	4,839	14,058,956	6,539,196
	1909	327	5,450	14,569,088	7,133,540
$100,000 to $1,000,000	1914	145	13,198	44,777,787	16,900,798
	1909	148	13,957	45,308,498	18,902,928
$1,000,000 and over	1914	28	20,806	99,461,735	21,192,641
	1909	24	19,558	85,947,143	22,553,567

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
Per cent distribution:					
Less than $5,000	1914	21.6	0.5	0.3	0.7
	1909	19.2	0.6	0.4	0.6
$5,000 to $20,000	1914	29.8	3.1	2.1	3.8
	1909	31.9	3.5	2.4	3.7
$20,000 to $100,000	1914	31.1	12.0	8.7	14.0
	1909	32.0	13.4	9.7	14.1
$100,000 to $1,000,000	1914	14.6	32.7	27.6	36.2
	1909	14.5	34.4	30.2	37.2
$1,000,000 and over	1914	2.8	51.6	61.3	45.4
	1909	2.4	48.2	57.3	44.4

There were 28 establishments in 1914 and 24 in 1909 whose products were valued at $1,000,000 or more. Although these establishments were relatively unimportant numerically, they gave employment to 51.6 per cent of the wage earners and their products formed 61.3 per cent of total for the entire industry in 1914, as compared with 48.2 per cent and 57.3 per cent, respectively, in 1909.

Table 11 shows the size of establishments in 1914 and 1909, as measured by the number of wage earners employed, for the industry as a whole and for the leading states.

In 1914 slightly more than one-third of all the wage earners employed in the industry were in establishments having over 1,000 wage earners, as compared with a little more than one-fourth in 1909. Only 66 establishments in 1914, or 6.7 per cent of the total, had more than 100 wage earners each, yet these establishments employed 70.9 per cent of the total average number of wage earners. These large establishments are located in Connecticut, Michigan, and New York.

The 82 establishments for which no wage earners were reported, were, as a rule, small concerns where

the work was done by the proprietors or firm members. If wage earners were employed the number was so small and the term of employment was so short that in computing the average, as described in the "Explanation of terms," the number was less than one person and the establishment was classed as having "no wage earners."

Table 11

STATE.	Census year.	TOTAL.		ESTABLISHMENTS EMPLOYING—															
				No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners		Over 1,000 wage earners	
		Establishments.	Wage-earners (average number).	Establishments.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States	1914	992	40,306	82	397	1,030	278	3,159	114	3,664	55	3,891	39	6,693	14	4,633	4	2,870	9	14,366
	1909	1,021	40,618	56	429	1,136	288	3,285	120	3,743	54	3,673	44	6,653	17	5,769	6	5,013	7	11,346
Connecticut	1914	67	16,781	3	18	40	9	95	13	420	7	462	3	590	6	2,135	1	951	7	12,088
	1909	80	16,817	7	28	82	11	116	10	325	5	314	4	627	6	2,096	3	2,957	6	10,300
Illinois	1914	75	1,502	5	23	61	30	352	10	332	5	364	2	393	.....	.....	.....	.....	.....	.....
	1909	79	1,688	5	24	67	30	318	11	367	4	294	5	642	.....	.....	.....	.....	.....	.....
Indiana	1914	21	562	4	5	10	8	105	2	83	.....	.....	2	364	.....	.....	.....	.....	.....	.....
	1909	21	468	1	11	20	3	42	4	151	.....	.....	2	255	.....	.....	.....	.....	.....	.....
Massachusetts	1914	73	1,620	5	29	84	29	275	4	122	3	193	2	375	.....	.....	1	571	.....	.....
	1909	85	1,791	3	34	82	32	356	11	345	1	54	3	425	.....	.....	1	529	.....	.....
Michigan	1914	64	4,731	2	23	50	13	172	6	221	5	350	11	1,919	3	965	.....	.....	1	1,054
	1909	60	4,771	1	17	40	11	119	8	234	9	668	10	1,578	3	1,086	.....	.....	1	1,046
New Jersey	1914	61	1,236	6	27	72	13	167	7	214	5	401	3	382	.....	.....	.....	.....	.....	.....
	1909	66	1,265	4	29	76	16	196	9	288	6	445	2	260	.....	.....	.....	.....	.....	.....
New York	1914	228	6,627	25	97	233	60	714	21	656	12	843	8	1,329	3	923	1	705	1	1,224
	1909	247	6,651	12	110	304	77	910	20	582	12	789	11	1,691	4	1,391	1	984	.....	.....
Ohio	1914	84	2,277	1	35	94	26	305	10	287	7	509	3	472	2	610	.....	.....	.....	.....
	1909	82	2,232	3	31	89	29	356	9	285	5	339	2	296	3	867	.....	.....	.....	.....
Pennsylvania	1914	107	1,940	6	45	140	32	347	15	492	6	415	3	546	.....	.....	.....	.....	.....	.....
	1909	104	2,080	5	46	125	27	279	15	452	6	345	5	879	.....	.....	.....	.....	.....	.....
Wisconsin	1914	30	1,122	1	11	28	9	95	6	197	2	159	.....	.....	.....	.....	1	643	.....	.....
	1909	33	1,289	1	13	25	11	105	5	204	1	83	.....	.....	1	329	1	543	.....	.....

Engines and power.—Table 12 shows, for 1914, 1909, and 1904, for the industry, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

Table 12

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	2,959	1,962	577	122,700	106,120	69,494	100.0	100.0	100.0
Owned	498	597	577	90,301	86,365	63,856	73.6	81.4	91.9
Steam engines and turbines [1]	281	358	391	78,639	78,101	59,063	64.1	73.6	84.7
Internal-combustion engines	186	198	149	8,371	4,890	1,834	6.8	4.6	2.9
Water wheels, turbines, and motors	31	41	37	3,291	3,374	2,959	2.7	3.2	4.3
Rented	2,461	1,365	(2)	32,399	19,755	5,638	26.4	18.6	8.1
Electric	2,461	1,365	(2)	31,673	18,399	3,143	25.8	17.3	4.5
Other	.....	.....	.....	726	1,356	2,495	0.6	1.3	3.6
Electric	4,709	2,601	.....	64,868	33,462	8,846	100.0	100.0	100.0
Rented	2,461	1,365	(2)	31,673	18,399	3,143	48.8	55.0	35.5
Generated by establishments reporting	2,248	1,236	462	33,195	15,063	5,703	51.2	45.0	64.5

[1] Figures for horsepower include for 1904 the amounts reported under the head of "other" owned power.

[2] Not reported.

The total horsepower used in the industry in 1914 was more than one-seventh greater than in 1909 and nearly twice as great as in 1904. Steam engines and turbines formed the principal source of power at each census, but there was only a small increase in their use during the period 1909–1914, while the use of rented electric power nearly doubled, amounting to over one-fourth of the total horsepower reported for the industry for the later year. Not only has the use of rented electric power increased considerably but a greater proportion of the owned power is transformed into electric current for transmission to the machinery which it drives. The power of electric motors operated by current generated in the establishments reporting, more than doubled during the period 1909–1914. A considerable increase was also shown during this period for the amount of power reported as derived from internal-combustion engines.

Fuel.—Table 13 shows, for 1914, the quantity of each kind of fuel used, for which data were obtained, for the industry as a whole, and for 10 of the leading states.

Large quantities of each of the various kinds of fuel mentioned in the table were used in the industry, a considerable proportion being used in the heating of the metals to assist the manufacturing processes. Connecticut led in the use of coal (both anthracite and bituminous) and oil; Michigan, of coke; and Ohio, of gas.

Table 13

STATE.	COAL. Anthracite (tons, 2,240 lbs.).	COAL. Bituminous (tons, 2,000 lbs.).	Coke (tons, 2,000 lbs.)	Oil, including gasoline (barrels).	Gas (1,000 cubic feet).
United States	127,828	378,306	75,812	310,910	464,259
Connecticut	79,797	187,671	3,249	125,653	28,761
Illinois	1,812	8,760	4,623	20,410	5,937
Indiana	6	839	1,656	304	14,518
Massachusetts	8,338	14,008	493	14,615	1,398
Michigan	498	48,577	24,103	33,615	14,752
New Jersey	5,080	17,891	3,296	16,900	10,869
New York	21,572	32,695	8,244	24,292	52,444
Ohio	47	14,612	6,568	6,018	207,507
Pennsylvania	3,896	18,936	12,545	6,234	108,991
Wisconsin	5,194	26,418	1,209	18,911	3,610
All other states	1,588	7,899	9,826	43,958	15,472

SPECIAL STATISTICS RELATING TO PRODUCTS.

Table 14 presents the different classes of and shows the total value of the output of brass, bronze, and copper products in 1914, including those made as subsidiary products by establishments engaged primarily in other industries, separate figures being shown for the output of these establishments and for the output of establishments engaged primarily in the industry. Statistics are also presented relating to the character of the various products and to the kind of metal employed in their manufacture. Similar statistics were not compiled for prior censuses.

Table 14

BRASS, BRONZE, AND COPPER PRODUCTS: 1914.

PRODUCT.	Total.	Establishments assigned to this industry.	Establishments engaged primarily in other industries.	Distributed by kind of metal. Brass and bronze.	Copper.	Other.
Total value	$231,262,754	$162,199,019	$69,063,735	$131,503,724	$82,841,246	$16,917,784
Ingots and bars	8,819,571	4,791,708	4,027,863	7,460,396	1,357,804	1,371
Plates and sheets	43,019,997	41,655,037	1,364,960	25,928,193	13,638,770	3,453,034
Rods	14,569,759	12,189,421	2,380,338	8,277,388	6,220,067	72,304
Tubing	13,934,641	13,914,790	19,851	10,131,975	3,613,370	189,296
Seamless	10,273,755	10,268,980	4,775	6,967,813	3,119,458	186,484
Brazed	3,660,886	3,645,810	15,076	3,164,162	493,912	2,812
Wire	60,069,738	14,333,142	45,736,596	5,851,670	52,940,097	1,277,971
Plain	44,360,456	13,486,703	30,873,753	5,851,670	[1]37,230,815	1,277,971
Insulated	15,709,282	846,439	14,862,843	----	15,709,282	----
Other manufactured products	85,206,435	69,819,397	15,387,038	73,854,102	5,071,138	[2]6,281,195
All other products	5,642,613	5,495,524	147,089	----	----	[3]5,642,613

[1] Includes $13,966,315, estimated value of 23,458 tons manufactured and consumed in establishments engaged in the manufacture of electrical machinery.
[2] Includes aluminum castings, to the value of $6,101,198.
[3] Includes amounts received for contract or custom work and value of some products made from metals other than brass, bronze, copper, German silver, or aluminum.

Of the total value of the output of brass, bronze, and copper products in 1914, 70.1 per cent was produced by establishments assigned to the industry. The remainder was produced chiefly by wire departments of steel works and rolling mills and by establishments engaged in drawing wire from purchased rods. Of the total value of products, 56.9 per cent were brass and bronze products; 35.8 per cent were copper products, and the remainder comprised German silver products, aluminum castings, custom and repair work, and products made from other metals in combination with brass, bronze, and copper.

More than one-third (36.8 per cent) of the total output was included under "other manufactured products," and comprised chiefly castings. Wire, including both plain and insulated, represented 26 per cent of the total and plates and sheets 18.6 per cent. Only about one-fourth of the total output of brass, bronze, copper, and "other" wire was produced by establishments assigned to the industry. Of the total output of brass and bronze products reported in 1914, more than one-half was included under "other manufactured products," comprising chiefly brass castings. The second largest item was plates and sheets. Copper wire comprised 63.9 per cent of the total output of copper products and plates and sheets, the second largest item, formed 16.5 per cent. Of the "other" metal group, "other manufactured products," which includes aluminum castings, valued at $6,101,198, represented 37.1 per cent of the total; while German silver plates and sheets represented 20.4 per cent of the total for this group.

DETAIL STATE TABLES.

The principal statistics secured by the census inquiry concerning the establishments engaged primarily in the industry are presented, by states, in Tables 15 and 16. Table 15 shows, for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products as reported for the industry.

Table 16 presents, for 1914, by states, the more detailed statistics for the industry.

TABLE 15.—COMPARATIVE SUMMARY, BY STATES: 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	992	40,306	122,700	$25,084	$115,487	$162,199
	1909	1,021	40,618	106,120	23,677	99,228	149,989
	1904	813	33,168	69,494	17,666	65,653	102,407
California	1914	36	247	400	230	487	951
	1909	29	195	261	181	295	679
	1904	[1] 22	388	223	260	321	940
Colorado	1914	7	36	75	26	54	101
	1909	5	42	52	36	75	145
	1904	[1] 4	32	29	22	48	92
Connecticut	1914	67	16,781	57,033	9,846	53,886	69,353
	1909	80	16,817	50,034	9,667	47,864	66,933
	1904	[2] 64	15,382	38,915	8,196	37,913	53,916
Illinois	1914	75	1,502	2,698	1,109	5,240	7,570
	1909	79	1,688	1,859	1,136	4,148	6,842
	1904	[2] 58	1,605	1,231	919	2,372	4,751
Indiana	1914	21	562	1,166	421	802	1,561
	1909	21	468	503	292	774	1,379
	1904	[2] 9	101	143	55	85	175
Kentucky	1914	9	59	166	39	73	137
	1909	7	25	99	12	32	61
	1904	[1] 5	54	73	20	60	121
Maine	1914	5	31	70	26	42	84
	1909	3	12	10	7	6	14
	1904	4	63	97	32	47	122
Maryland	1914	15	392	2,078	243	753	1,173
	1909	17	219	243	98	432	748
	1904	9	107	153	44	182	318
Massachusetts	1914	73	1,620	7,415	1,063	3,715	5,959
	1909	85	1,791	6,407	1,115	3,663	6,042
	1904	[1] 75	1,559	1,248	863	1,702	3,362
Michigan	1914	64	4,731	14,251	3,030	11,473	16,869
	1909	60	4,771	11,622	2,450	8,993	13,890
	1904	[1] 36	2,029	2,036	936	1,703	3,695
Minnesota	1914	9	99	154	68	242	359
	1909	7	33	37	22	91	139
Missouri	1914	18	383	523	264	2,438	3,047
	1909	18	297	448	196	1,654	2,221
	1904	16	196	178	122	1,184	1,527
New Hampshire	1914	5	53	146	$30	$50	$99
	1909	5	56	123	29	45	102
	1904	7	85	129	48	70	161
New Jersey	1914	61	1,236	5,798	760	3,175	4,686
	1909	66	1,265	4,431	719	3,355	5,131
	1904	[2] 51	1,082	2,682	570	2,354	3,754
New York	1914	228	6,627	13,667	4,051	15,215	23,965
	1909	247	6,651	13,397	3,951	13,139	22,184
	1904	[2] 184	3,882	3,694	2,088	8,868	8,045
Ohio	1914	84	2,277	4,393	1,557	4,190	7,843
	1909	82	2,232	4,214	1,372	3,533	6,572
	1904	70	1,485	1,860	808	1,545	3,347
Oregon	1914	6	35	138	34	59	140
	1909	4	42	66	49	41	122
	1904	[2] 3	19	38	13	20	42
Pennsylvania	1914	107	1,940	4,578	1,260	7,123	9,780
	1909	104	2,080	4,996	1,234	5,605	8,455
	1904	[2] 98	1,695	5,261	949	3,271	5,443
Rhode Island	1914	19	123	149	76	210	577
	1909	18	225	350	118	549	828
	1904	[2] 26	301	226	141	342	668
Texas	1914	7	91	189	63	351	495
	1909	8	112	146	61	309	518
Washington	1914	11	45	118	42	84	180
	1909	7	40	60	33	60	136
	1904	[1] 5	20	20	11	9	30
West Virginia	1914	4	49	125	25	103	193
	1909	3	41	140	21	101	193
	1904	3	74	70	29	46	101
Wisconsin	1914	30	1,122	7,053	674	4,395	5,409
	1909	33	1,289	6,102	751	3,514	5,387
	1904	[2] 18	505	1,476	267	605	1,100
All other states	1914	31	265	317	147	1,327	1,668
	1909	33	227	520	127	950	1,268
	1904	46	2,504	9,712	1,273	7,897	10,697

[1] Excludes statistics for one establishment, to avoid disclosing operations of individual establishments.
[2] Excludes statistics for two establishments, to avoid disclosing operations of individual establishments.

TABLE 16.—DETAIL STATISTICS FOR THE INDUSTRY, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.	EXPENSES.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of— Maximum month.	Number, 15th day of— Minimum month.		Male.	Female.	Male.	Female.		Officials.	Clerks, etc.
United States	992	45,657	791	1,355	2,443	762	40,306	Ap 41,971	No 38,789	39,911	37,165	2,486	207	53	$116,092,882	$3,705,227	$3,368,771
California	36	342	35	28	28	4	247	Au 268	Mh 225	246	245	.....	1	.....	620,679	53,074	27,603
Colorado	7	48	8	3	1	.....	36	Jy 40	Ap 33	38	37	.....	1	.....	74,220	3,890	975
Connecticut	67	18,196	33	231	942	209	16,781	Mh 17,455	No 16,218	16,893	15,061	1,734	58	40	51,885,745	801,734	1,340,398
Illinois	75	1,798	46	101	118	31	1,502	My 1,663	No 1,177	1,438	1,400	27	11	.....	3,898,065	251,190	165,302
Indiana	21	613	12	22	9	8	562	Mh 662	De 465	497	495	2	.....	.....	1,181,163	99,981	15,408
Kentucky	9	74	6	5	3	1	59	Ap 68	Fe 45	59	58	1	.....	.....	97,749	5,480	3,432
Maine	5	39	2	3	3	.....	31	De[1] 32	Se[1] 30	32	32	.....	.....	.....	74,311	4,984	2,492
Maryland	15	466	9	21	37	7	392	My 436	Oc 356	406	404	.....	2	.....	1,144,279	49,055	26,782
Massachusetts	73	1,845	62	77	53	33	1,620	Se 1,666	Au 1,562	1,623	1,583	32	7	1	3,979,238	238,785	90,797
Michigan	64	5,251	37	133	242	108	4,731	Mh 4,986	De 4,421	4,501	4,254	164	78	5	10,778,482	411,933	379,811
Minnesota	9	122	8	6	9	.....	99	Ap 112	De 78	98	98	.....	.....	.....	179,304	11,698	5,540
Missouri	18	471	15	30	39	4	383	Au 413	Fe 356	380	378	.....	2	.....	1,704,729	82,973	55,779
New Hampshire	5	61	4	3	.....	1	53	Au[1] 56	Ja 46	52	52	.....	.....	.....	96,311	5,900	766
New Jersey	61	1,464	54	69	80	25	1,236	Ap 1,320	De 1,153	1,199	1,168	5	26	.....	3,254,160	176,640	90,564
New York	228	7,643	220	240	397	159	6,627	My 7,028	Se 6,282	6,696	6,233	447	10	6	16,279,244	613,555	478,354
Ohio	84	2,768	59	146	203	83	2,277	Ap 2,573	No 2,096	2,115	2,086	29	.....	.....	5,975,522	326,920	311,439
Oregon	6	48	5	4	4	.....	35	My[1] 38	De[1] 32	32	32	.....	.....	.....	135,048	8,760	2,640
Pennsylvania	107	2,400	100	133	173	54	1,940	Mh 1,999	No 1,864	1,950	1,914	28	8	.....	8,798,223	342,603	235,025
Rhode Island	19	160	17	10	5	5	123	De[1] 129	Ap 114	132	125	5	1	1	310,982	21,561	5,615
Texas	7	113	6	9	7	.....	91	Mh 105	De[1] 80	85	85	.....	.....	.....	319,036	19,007	7,624
Utah	3	6	4	.....	.....	.....	2	Mh[1] 3	De[1] 1	2	2	.....	.....	.....	12,050	.....	.....
Washington	11	69	8	9	5	2	45	Jy 53	De 39	44	42	1	1	.....	140,089	14,250	4,153
West Virginia	4	74	2	15	5	3	49	Ap[1] 50	No 47	47	44	3	.....	.....	221,707	14,042	5,923
Wisconsin	30	1,254	15	39	59	19	1,122	Ap 1,210	Ja 1,040	1,087	1,079	7	1	.....	4,076,671	108,326	84,818
All other states[2]	28	332	24	18	21	6	263	.....	.....	259	258	1	.....	.....	855,875	35,886	27,031

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					
	Salaries and wages—continued.	For contract work.	Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage earners.		Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.[3]	Internal-combustion engines.[4]	Water wheels and motors.[3]	Electric (rented).	
United States	$25,084,281	$111,021	$590,728	$790,896	$111,654,988	$3,831,780	$162,199,019	$46,712,251	122,700	78,639	9,097	3,291	31,673	33,195
California	230,009	1,193	21,272	3,249	463,917	23,289	951,309	464,103	400	.....	32	.....	368	.....
Colorado	26,309	50	3,155	728	49,877	3,901	100,991	47,213	75	.....	.....	.....	75	.....
Connecticut	9,845,800	125	34,905	354,857	52,015,862	1,869,910	69,353,103	15,467,331	57,033	38,032	4,343	2,935	11,723	22,834
Illinois	1,108,899	21,920	75,456	22,098	5,110,461	129,950	7,570,456	2,330,045	2,698	200	298	100	2,100	163
Indiana	420,525	2,000	5,697	7,704	775,914	26,322	1,560,897	758,661	1,166	20	782	.....	364	.....
Kentucky	39,041	.....	3,889	519	68,327	4,281	137,407	64,799	166	.....	.....	.....	166	.....
Maine	25,636	.....	405	298	39,597	2,716	84,119	41,806	70	50	.....	.....	20	.....
Maryland	242,638	.....	7,237	6,847	706,280	46,957	1,173,364	420,127	2,078	293	51	.....	1,734	.....
Massachusetts	1,063,053	2,227	40,972	60,059	3,531,297	183,499	5,958,863	2,244,067	7,415	4,790	79	15	2,531	226
Michigan	3,029,911	6,632	18,748	97,612	11,109,573	363,894	16,868,725	5,395,255	14,251	11,278	288	.....	2,685	3,798
Minnesota	67,513	381	5,600	1,111	229,862	12,106	358,643	116,675	154	.....	.....	.....	154	.....
Missouri	264,214	.....	7,134	10,848	2,404,432	34,010	3,047,306	608,864	523	160	65	.....	298	80
New Hampshire	30,172	.....	399	890	44,639	5,130	99,384	49,615	146	70	.....	50	26	.....
New Jersey	759,673	914	25,646	19,298	2,995,147	179,718	4,686,427	1,511,562	5,798	4,362	272	25	1,139	203
New York	4,050,792	36,819	237,992	80,162	14,783,058	431,735	23,964,582	8,749,789	13,667	7,334	1,359	128	4,846	1,791
Ohio	1,557,484	2,595	36,347	43,092	4,057,096	132,449	7,843,092	3,653,547	4,393	2,816	546	.....	1,031	910
Oregon	33,688	.....	1,915	780	55,165	4,093	139,647	80,389	138	.....	.....	.....	138	.....
Pennsylvania	1,259,963	16,234	33,137	32,418	6,964,783	158,430	9,779,626	2,656,413	4,578	2,505	806	35	1,232	578
Rhode Island	76,112	2,468	5,690	2,404	200,265	9,619	576,617	366,733	149	39	26	.....	84	5
Texas	63,059	6,558	6,399	2,533	339,123	12,003	494,763	143,637	189	.....	.....	.....	189	.....
Utah	1,885	.....	.....	75	4,485	223	10,020	5,312	4	.....	4	.....	.....	.....
Washington	41,859	3,126	2,951	922	79,599	4,259	179,794	95,936	118	.....	.....	.....	118	.....
West Virginia	24,608	6,300	1,390	930	100,750	2,269	192,986	89,967	125	120	.....	.....	5	.....
Wisconsin	674,430	173	7,921	36,050	4,230,577	164,411	5,409,260	1,014,272	7,053	6,475	136	.....	442	2,602
All other states[2]	147,008	1,306	9,471	4,812	1,294,902	26,606	1,657,638	336,130	313	95	10	3	205	5

[1] Same number reported for one or more other months.
[2] All other states embrace: Alabama, 4 establishments; Delaware, 1; District of Columbia, 2; Georgia, 2; Iowa, 6; Kansas, 2; Louisiana, 1; Montana, 1; Nebraska, 3; Tennessee, 3; Vermont, 2; Virginia, 1.
[3] Owned power only.
[4] Includes rented power, other than electric.

NEEDLES, PINS, AND HOOKS AND EYES.

By Frank Adams.

SUMMARY AND ANALYSIS.

Scope of the industry.—This report presents statistics for the manufacture of (1) needles, which include knitting-machine needles, sewing-machine needles, and darning, canvas, and bag needles; (2) pins, including common or toilet pins, safety pins and hairpins of metal; and (3) hooks and eyes.

The manufacture of pins was first reported as an industry at the census of 1850, and that of needles and hooks and eyes at the census of 1860. It is probable, however, that these articles were manufactured in the United States, to some extent, prior to the time statistics for them were given in the census reports. At the census of 1860 they were reported in four separate classes—pins, needles, sewing-machine needles, and hooks and eyes, but in 1869 they were consolidated into the two classes—needles and pins, and hooks and eyes. In 1904 these two classes were combined, and since that time the general statistics of capital, employees, etc., have been presented for needles, pins, and hooks and eyes as a single industry.

In 1869 there were 48 establishments reported as manufacturing needles, pins, and hooks and eyes. These establishments gave employment to 841 wage earners, and their products were valued at $1,225,436. While there has been but little change in the number of establishments reported at subsequent censuses, the industry has steadily progressed. The number of wage earners reported for 1914 and the value of products were more than six times as great as at the census of 1869, and the cost of materials more than seven times as great.

Table 1 summarizes the statistics of establishments engaged in the manufacture of needles, pins, and hooks and eyes for each census from 1879 to 1914 and gives percentages of increase for the various items shown.

Table 1

	NUMBER OR AMOUNT.						PER CENT OF INCREASE.[1]				
	1914	1909	1904	1899	1889	1879	1909–1914	1904–1909	1899–1904	1889–1899	1879–1889
Number of establishments	49	49	46	52	55	45					
Persons engaged	5,750	4,978	4,196	(2)	(2)	(2)	15.5	18.6			
Proprietors and firm members	20	27	31	(2)	(2)	(2)					
Salaried employees	391	313	200	135	96	(2)	24.9	56.5	48.1		
Wage earners (average number)	5,339	4,638	3,965	2,653	1,827	1,305	15.1	17.0	49.5	45.2	40.0
Primary horsepower	4,813	4,542	2,440	2,103	1,183	(2)	6.0	86.1	16.0	77.8	
Capital	$9,424,203	$6,705,118	$5,331,939	$4,617,552	$2,269,707	$1,564,738	40.6	25.8	15.5	103.4	45.1
Salaries and wages	3,104,749	2,457,728	1,848,741	1,214,571	876,446	480,535	26.3	32.9	52.2	38.6	82.4
Salaries	598,138	393,350	252,818	147,207	120,891	(2)	52.1	55.6	71.7	21.8	
Wages	2,506,611	2,064,378	1,595,923	1,067,364	755,555	(2)	21.4	29.4	49.5	41.3	57.2
Paid for contract work	40,571	35,779	(2)	(2)	(2)	(2)	13.4				
Rent and taxes (including internal revenue)	222,374	166,712	[3] 142,788	(2)	(2)	(2)	33.4	16.8			
Cost of materials	3,241,657	2,328,674	1,583,644	1,227,997	776,057	805,999	39.2	47.0	29.0	58.2	−3.7
Value of products	7,890,879	6,694,095	4,750,589	3,237,982	2,109,469	1,748,101	17.9	40.9	46.7	53.5	20.7
Value added by manufacture (value of products less cost of materials	4,649,222	4,365,421	3,166,945	2,009,985	1,333,412	942,102	6.5	37.8	57.6	50.7	41.5

[1] A minus sign (−) denotes decrease; percentages are omitted where base is less than 100. [2] Figures not available. [3] Exclusive of internal revenue.

From 1899 to 1914 the average number of wage earners increased 2,686, or 101.2 per cent, and the value of products, $4,652,897, or 143.7 per cent. From 1909 to 1914 the cost of materials increased 39.2 per cent, while the value added by manufacture increased only 6.5 per cent. In addition to the total value of products for 1914, as reported in Table 1, needles, pins, and hooks and eyes, to the value of $1,155,144, were produced as subsidiary products by establishments engaged primarily in the manufacture of other products, such as suspenders, garters, etc., stamped and enameled ware, sewing machines, and foundry and machine-shop products.

Summary, by states.—Table 2 summarizes the more important statistics of the industry, by states, the states being arranged according to the value of products reported for 1914.

The industry is largely localized in Connecticut, which reported almost two-thirds (64.7 per cent) of the total value of products for the United States in 1914. Pennsylvania ranked second in value of products and New Jersey third.

Table 2

STATE.	CENSUS OF 1914. Number of establishments.	Wage earners. Average number.	Wage earners. Per cent distribution.	Wage earners. Rank. 1914	Wage earners. Rank. 1909	Value of products. Amount.	Value of products. Per cent distribution.	Value of products. Rank. 1914	Value of products. Rank. 1909	Value added by manufacture. Amount.	Value added by manufacture. Per cent distribution.	Value added by manufacture. Rank. 1914	Value added by manufacture. Rank. 1909	PER CENT OF INCREASE.[1] Wage earners (average number). 1909–1914	Wage earners (average number). 1904–1909	Value of products. 1909–1914	Value of products. 1904–1909	Value added by manufacture. 1909–1914	Value added by manufacture. 1904–1909
United States...	49	5,339	100.0	.....	.....	$7,890,879	100.0	.....	.....	$4,649,222	100.0	.....	.....	15.1	17.0	17.9	40.9	6.5	37.8
Connecticut.....	12	3,068	57.5	1	1	5,108,556	64.7	1	1	2,769,103	59.6	1	1	15.9	13.8	20.6	38.3	9.1	35.1
New Jersey.....	7	515	9.6	3	2	597,066	7.6	3	3	395,865	8.5	3	3	−7.5	.....	−3.7	.....	−9.3	.....
Massachusetts.....	4	535	10.0	2	5	577,119	7.3	4	6	387,405	8.3	4	6	.....	.....	.....	.....	.....	.....
New York.....	6	230	4.3	6	6	306,868	3.9	5	4	204,592	4.4	6	5	72.9	−48.8	5.9	3.9	4.2	15.5
New Hampshire.....	6	366	6.9	5	3	259,854	3.3	6	5	213,034	4.6	5	4	−16.4	24.1	−5.4	32.0	−10.1	29.1
All other states.....	14	625	11.7	.....	.....	1,041,416	13.2	.....	.....	679,223	14.6	.....	.....	.....	.....	.....	.....	.....	.....

[1] Percentages are based on figures in Table 14; a minus sign (−) denotes decrease. Percentages are omitted where base is less than 100 for wage earners or less than $100,000 for value of products or value added by manufacture, or where comparable figures can not be given.

Persons engaged in the industry.—Table 3 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, the average number of wage earners being distributed also by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in "Explanation of terms."

Table 3

CLASS.	Census year.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Male.	Female.	Per cent of total. Male.	Per cent of total. Female.
All classes.....	1914	5,750	2,928	2,822	50.9	49.1
	1909	4,978	2,553	2,425	51.3	48.7
Proprietors and officials.....	1914	135	133	2	98.5	1.5
	1909	136	131	5	96.3	3.7
Proprietors and firm members....	1914	20	19	1	95.0	5.0
	1909	27	26	1	96.3	3.7
Salaried officers of corporations....	1914	55	54	1	98.2	1.8
	1909	46	44	2	95.7	4.3
Superintendents and managers....	1914	60	60	.....	100.0	.....
	1909	63	61	2	96.8	3.2
Clerks and other subordinate salaried employees.....	1914	276	154	122	55.8	44.2
	1909	204	123	81	60.3	39.7
Wage earners (average number).....	1914	5,339	2,641	2,698	49.5	50.5
	1909	4,638	2,299	2,339	49.6	50.4
16 years of age and over.....	1914	5,086	2,562	2,524	50.4	49.6
	1909	4,282	2,117	2,165	49.4	50.6
Under 16 years of age.....	1914	253	79	174	31.2	68.8
	1909	356	182	174	51.1	48.9

There were 5,750 persons reported as engaged in the industry during 1914, of whom 5,339, or 92.9 per cent, were wage earners. Clerks and other subordinate salaried employees, numbering 276, constituted 4.8 per cent of the total, and proprietors and officials, 135 in number, represented 2.3 per cent. Of the total number of persons employed, 50.9 per cent were males in 1914, and 51.3 per cent in 1909. Wage earners under 16 years of age decreased from 356 in 1909 to 253 in 1914. More than two-thirds of this class in 1914 were females.

Wage earners employed, by months.—The following table gives, for the industry, the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

Table 4

MONTH.	WAGE EARNERS IN THE INDUSTRY. Number.[1] 1914	Number.[1] 1909	Number.[1] 1904	Per cent of maximum. 1914	Per cent of maximum. 1909	Per cent of maximum. 1904
January.....	5,497	4,370	3,920	100.0	88.8	97.5
February.....	5,474	4,424	3,985	99.6	89.9	99.1
March.....	5,445	4,567	4,012	99.1	92.8	99.8
April.....	5,421	4,662	3,962	98.6	94.7	98.5
May.....	5,405	4,704	3,933	98.3	95.6	97.8
June.....	5,268	4,604	3,912	95.8	93.6	97.3
July.....	5,318	4,496	3,913	96.7	91.4	97.3
August.....	5,199	4,652	3,944	94.6	94.5	98.1
September.....	5,288	4,702	4,022	96.2	95.5	100.0
October.....	5,279	4,759	4,005	96.0	96.7	99.6
November.....	5,258	4,789	3,997	95.7	97.3	99.4
December.....	5,216	4,921	3,975	94.9	100.0	98.8

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904, the average number employed during the month.

The average monthly employment of wage earners in 1914 was 5,339; in 1909, 4,638; and in 1904, 3,965. In 1914 the maximum number for the year was employed in January and the minimum in August. In 1909, however, the industry was at its height in December, and January was the month of least activity. Of the three years, 1909 showed the maximum degree of variation within the year, the difference between the months of greatest and least employment being 551.

Table 5 gives the total average number of wage earners employed in the industry, together with the number employed on the 15th (or nearest representative day) of each month during 1914 in each state for which figures can be shown separately.

Table 5

WAGE EARNERS: 1914.
[Month of maximum employment for each state is indicated by **boldface** figures and that of minimum by *italic* figures.]

STATE.	Average number employed during year.	Number employed on 15th day of the month or nearest representative day.											Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States	5,339	**5,497**	5,474	5,445	5,421	5,405	5,268	5,318	*5,199*	5,288	5,279	5,258	5,216	94.6
Connecticut	3,068	3,128	3,087	3,120	3,087	3,021	*2,974*	2,978	2,988	3,060	3,091	3,131	3,151	94.4
Massachusetts	535	568	576	548	549	543	494	*489*	491	559	538	543	522	84.9
New Hampshire	366	382	388	376	372	368	344	337	*336*	369	368	377	375	86.6
New Jersey	515	*505*	511	513	517	524	510	517	523	518	511	514	517	96.4
New York	230	257	260	**268**	256	234	216	207	225	212	219	210	*196*	73.1

Prevailing hours of labor.—In Table 6 the average number of wage earners reported for 1914 and 1909 for the industry and for the leading states in 1914 have been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment was classified as a total, even though a few employees worked a greater or smaller number of hours.

Table 6

STATE.	Census year.	AVERAGE NUMBER OF WAGE EARNERS.					
		Total.	In establishments where the prevailing hours of labor per week were—				
			48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.
United States	1914	5,339	20	171	1,178	3,206	764
	1909	4,638	24	35	423	1,815	2,341
Connecticut	1914	3,068	.....	127	.....	2,189	752
Massachusetts	1914	535	.....	.....	535	.....	.....
New Hampshire	1914	366	.....	.....	.....	366	.....
New Jersey	1914	515	1	.....	.....	514	.....
New York	1914	230	.....	28	202	.....	.....

Three-fifths of the wage earners employed in the industy in 1914 were in establishments operating between 54 and 60 hours per week. Of the 3,206 wage earners in this group, 68.3 per cent were reported from Connecticut and 16 per cent from New Jersey. All of the wage earners in Massachusetts, and most of those in New York and Pennsylvania, worked in establishments reporting 54 hours per week as the prevailing period of employment.

Character of ownership.—Table 7 presents statistics concerning the character of ownership, or legal organization, of the establishments in the industry for 1914 and 1909.

The 39 establishments operated under corporate control in 1914 gave employment to 5,235, or 98.1 per cent, of the wage earners and produced 98.3 per cent of the total value of products for all establishments. In 1909 corporations employed 94.3 per cent of the wage earners and manufactured 95.7 per cent of the total products.

Table 7

CHARACTER OF OWNERSHIP.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	49	5,339	$7,890,879	$4,649,222
	1909	49	4,638	6,694,095	4,365,421
Individual	1914	4	23	24,019	19,279
	1909	10	173	150,151	109,674
Corporation	1914	39	5,235	7,760,588	4,550,623
	1909	32	4,371	6,404,783	4,142,104
All other	1914	6	81	106,272	79,320
	1909	7	94	139,161	113,643
Per cent distribution:					
Individual	1914	8.2	0.4	0.3	0.4
	1909	20.4	3.7	2.2	2.5
Corporation	1914	79.6	98.1	98.3	97.9
	1909	65.3	94.3	95.7	94.9
All other	1914	12.2	1.5	1.3	1.7
	1909	14.3	2.0	2.1	2.6

Size of establishments.—The tendency of the industry to become concentrated in large establishments is indicated by the statistics given in Table 8.

Table 8

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	49	5,339	$7,890,879	$4,649,222
	1909	49	4,638	6,694,095	4,365,421
Less than $5,000	1914	6	19	17,082	12,608
	1909	10	31	28,675	23,086
$5,000 to $20,000	1914	10	107	125,690	94,250
	1909	13	123	145,800	106,188
$20,000 to $100,000	1914	17	706	790,821	557,099
	1909	14	729	641,960	529,217
$100,000 and over	1914	16	4,507	6,957,286	3,985,265
	1909	12	3,755	5,877,660	3,706,930
Per cent distribution:					
Less than $5,000	1914	12.2	0.4	0.2	0.3
	1909	20.4	0.7	0.4	0.5
$5,000 to $20,000	1914	20.4	2.0	1.6	2.0
	1909	26.5	2.7	2.2	2.4
$20,000 to $100,000	1914	34.7	13.2	10.0	12.0
	1909	28.6	15.7	9.6	12.1
$100,000 and over	1914	32.7	84.4	88.2	85.7
	1909	24.5	81.0	87.8	84.9

In 1914, 67.3 per cent of the establishments reported products valued at less than $100,000, as com-

pared with 75.5 per cent in 1909. The value of products for these establishments was only 11.8 per cent of the total for the industry in 1914 and 12.2 per cent in 1909.

The establishments that reported products valued at $100,000 or over gave employment to 84.4 per cent of the wage earners and reported 88.2 per cent of the value of products.

Table 9 shows the size of establishments in 1914 and 1909, as measured by the number of wage earners employed for the industry as a whole, and the leading states in 1914.

Table 9

STATE.	Census year.	TOTAL.		ESTABLISHMENTS EMPLOYING—													
				No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.	
		Establishments.	Wage earners (average number).	Establishments.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States	1914	49	5,339	.....	8	22	12	158	9	297	7	500	7	1,054	3	977	3	2,331
	1909	49	4,638	1	16	41	9	123	6	222	5	328	6	882	3	907	3	2,135
Connecticut	1914	12	3,068	.....	1	4	3	31	1	33	1	94	2	285	1	290	3	2,331
Massachusetts	1914	4	535	.....	.....	.....	.....	.....	1	45	1	86	1	147	1	257	.....	.....
New Hampshire	1914	6	366	.....	.....	.....	.....	.....	3	110	2	104	1	152	.....	.....	.....	.....
New Jersey	1914	7	515	.....	1	1	1	14	2	50	1	100	2	350	.....	.....	.....	.....
New York	1914	6	230	.....	1	2	2	23	1	28	1	57	1	120	.....	.....	.....	.....

A majority of the establishments in the industry are comparatively small. In 1914, 29 of the 49 establishments reported less than 51 wage earners, the number employed being 8.9 per cent of the total, while 6 of the larger establishments, which employed from 251 to 1,000 wage earners, reported 62 per cent of the total.

Engines and power.—Table 10 shows, for 1914, 1909, and 1904, for the industry, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

Table 10

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	298	179	57	4,813	4,542	2,440	100.0	100.0	100.0
Owned	37	40	42	3,984	3,644	2,170	82.8	80.2	88.9
Steam engines and turbines	26	27	28	3,359	3,102	1,816	69.8	68.3	74.4
Internal-combustion engines	1	4	4	5	112	14	0.1	2.5	0.6
Water wheels, turbines, and motors	10	9	10	620	430	340	12.9	9.4	13.9
Rented	261	139	15	829	898	270	17.2	19.8	11.1
Electric	261	139	15	799	860	129	16.6	18.9	5.3
Other	.....	.....	.....	30	38	141	0.6	0.8	5.8
Electric	393	197	32	2,447	1,667	529	100.0	100.0	100.0
Rented	261	139	15	799	860	129	32.7	51.6	24.4
Generated by establishments reporting	132	58	17	1,648	807	400	67.3	48.4	75.6

The total primary power used in the industry increased from 2,440 horsepower in 1904 to 4,813 in 1914, or 97.3 per cent during the decade. At each census power generated by steam constituted more than two-thirds of the total primary power. Electric horsepower increased from 529 in 1904 to 2,447 in 1914, or 362.6 per cent.

Fuel.—Table 11 shows, for 1914, the quantity of each kind of fuel used, for which data were obtained, for the industry as a whole and for five separate states.

Bituminous coal was the principal class of fuel used in 1914. Of the 14,978 tons consumed, 12,529 tons, or 83.6 per cent, were used in Connecticut. The largest quantity of anthracite coal, 2,090 tons, or 45.1 per cent, was used in New Jersey.

Table 11

STATE.	COAL.		Coke (tons 2,000 lbs.).	Oil, including gasoline (barrels)	Gas (1,000 cubic feet).
	Anthracite (tons, 2,240 lbs.).	Bituminous (tons, 2,000 lbs.).			
United States	4,630	14,978	46	1,139	7,627
Connecticut	1,538	12,529	46	1,027	6,174
Massachusetts	806	1,029	.....	.....	547
New Hampshire	85	132	.....	95	200
New Jersey	2,090	.....	.....	1	112
New York	49	760	.....	6	60
All other states	62	528	.....	10	534

SPECIAL STATISTICS RELATING TO QUANTITY AND VALUE OF PRODUCTS.

Table 12 gives detail statistics for the quantities and values of the different varieties of products reported for the industry at the censuses of 1914, 1904, and 1899. Statistics of this character were not called for at the census of 1909.

Table 12	1914	1904	1899
Products, total value[1]	$7,890,879	$4,750,589	$3,237,982
Needles:			
Total thousands	168,734	204,505	161,357
Total value	$1,278,444	$1,140,924	$1,027,949
Knitting-machine—			
Latch—			
Thousands	46,165	44,762	39,764
Value	$492,387	$422,655	$414,504
Spring—			
Thousands	47,934	47,921	44,246
Value	$129,397	$118,223	$114,660
All other needles, including sewing-machine—			
Thousands	74,635	111,822	77,346
Value	$656,660	$600,046	$498,785
Pins:			
Common or toilet—			
Total quantity	[2]	[3] 132,632,232	[3] 47,338,429
Total value	$1,248,757		
Made of steel wire—			
Pounds	641,121		
Value	$163,907		
Packs of 3,360	1,825,673		
Value	$182,585	$1,129,006	$465,605
Made of brass wire—			
Pounds	1,186,397		
Value	$375,780		
Packs of 3,600	1,633,035		
Value	$526,485		
Hairpins, made of metal—			
Gross	9,242,012	1,704,900	1,189,104
Value	$528,362	$109,245	$78,155
Safety pins—			
Gross	4,744,303	2,550,650	1,640,284
Value	$936,663	$829,386	$354,294
Hooks and eyes—			
Great gross	1,076,177		
Value	$1,394,745		
Made of steel wire—			
Great gross	654,714	[4]	[4]
Value	$761,476		
Made of brass wire—			
Great gross	421,463		
Value	$633,269		
All other products, value	$2,503,908	$1,542,028	$1,311,979

[1] In addition, needles, pins, and hooks and eyes, to the value of $1,155,144 in 1914, $942,506 in 1904, and $536,742 in 1899, were produced as subsidiary products by establishments engaged primarily in the manufacture of other products.
[2] Reported in pounds and packs of 3,360 and 3,600 in 1914.
[3] Reported in gross in 1904 and 1899.
[4] Included in "all other products" in 1904 and 1899.

The production of needles in the United States, which consists almost entirely of knitting-machine and sewing-machine needles, amounted to 168,734 thousands in 1914 and was valued at $1,278,444. Of this amount, 94,099 thousands, or 55.8 per cent, were knitting-machine needles, valued at $621,784. The number of needles manufactured in 1914 shows an increase of 7,377 thousands, or 4.6 per cent, over the production in 1899. This increase was confined to knitting-machine needles.

The output of all varieties of pins in 1914 was valued at $2,713,782, of which common or toilet pins formed 46 per cent; metal hairpins, 19.5 per cent; and safety pins, 34.5 per cent.

Common or toilet pins were reported in pounds and packs at the census of 1914, but by the gross in 1904 and 1899; therefore no comparison can be made to show the increased quantity, but the value increased 168.2 per cent during the period from 1899 to 1914.

The quantity of metal hairpins reported for 1914 was nearly eight times that for 1899 and over five times the production of 1904. Safety pins increased 189.2 per cent from 1899 to 1914 in quantity and 164.4 per cent in value.

Of the 49 establishments reported in 1914, 16 manufactured knitting-machine needles; 3, sewing-machine needles; 10, common or toilet pins; 7, metal hairpins; 9, safety pins; 14, hooks and eyes; and 8, snap fasteners and clasps.

Connecticut reported $5,108,556, or 64.7 per cent, of the total value of needles, pins, and hooks and eyes manufactured in 1914; $990,169, or 79.3 per cent, of the common or toilet pins; $321,605, or 60.9 per cent, of the hairpins; and $717,412, or 51.4 per cent, of the hooks and eyes. The 6 establishments in New Hampshire practically confine their operations to the production of knitting-machine needles, reporting this product in 1914, to the value of $238,841, or 38.4 per cent of the United States total. Connecticut was the leading state in the production of knitting-machine needles, though the actual figures can not be presented without disclosing the operations of individual establishments. Connecticut was also the leading state in the production of safety pins.

DETAIL STATE TABLES.

Table 13 shows, for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products reported for the industry. Table 14 presents, for 1914, by states, the more detailed statistics of the industry.

TABLE 13.—COMPARATIVE SUMMARY FOR 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	49	5,339	4,813	$2,507	$3,242	$7,891
	1909	49	4,638	4,542	2,064	2,329	6,694
	1904	46	3,965	2,440	1,596	1,584	4,751
Connecticut	1914	12	3,068	3,235	1,548	2,339	5,109
	1909	8	2,648	3,190	1,311	1,697	4,236
	1904	13	2,326	1,654	1,055	1,182	3,062
New Hampshire	1914	6	366	247	159	47	260
	1909	7	438	217	171	38	275
	1904	6	353	249	127	25	208
New Jersey	1914	7	515	329	215	201	597
	1909	7	557	524	230	184	620
New York	1914	6	230	187	92	102	307
	1909	9	133	157	50	93	290
	1904	8	260	89	82	109	279
All other states	1914	18	1,160	815	493	553	1,618
	1909	18	862	454	302	317	1,273
	1904	19	1,026	448	332	268	1,202

TABLE 14.—DETAIL STATISTICS, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.	EXPENSES.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of— Maximum month.	Number, 15th day of— Minimum month.		Male.	Female.	Male	Female		Officials.	Clerks, etc.
United States	49	5,750	20	115	154	122	5,339	Ja 5,497	Au 5,199	5,408	2,595	2,557	80	176	$9,424,203	$308,408	$289,730
Connecticut	12	3,286	7	44	96	71	3,068	De 3,151	Je 2,974	3,146	1,694	1,286	54	112	4,984,274	131,777	179,471
Massachusetts	4	591	3	17	22	14	535	Fe 576	Jy 489	558	268	286	3	1	1,175,920	47,416	31,630
New Hampshire	6	377	.....	7	1	3	366	Fe 388	Au 336	375	183	191	.....	1	214,380	10,480	2,501
New Jersey	7	546	1	14	8	8	515	My 524	Ja 505	517	222	261	20	14	654,452	32,900	11,076
New York	6	249	3	10	4	2	230	Mh 268	De 196	196	77	113	3	3	395,473	22,770	5,631
All other states[1]	14	701	6	23	23	24	625	.....	.....	616	151	420	.....	45	1,999,704	63,065	59,421

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					
	Salaries and wages—continued.		Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage earners.	For contract work.	Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.[2]	Internal-combustion engines.[3]	Water wheels and motors.[2]	Electric (rented).	
United States	$2,506,611	$40,571	$161,186	$61,188	$3,132,980	$108,677	$7,890,879	$4,649,222	4,813	3,359	35	620	799	1,648
Connecticut	1,547,548	20,442	111,852	38,089	2,275,171	64,282	5,108,556	2,769,103	3,235	2,615	.....	510	110	1,450
Massachusetts	267,800	.....	5,663	11,844	175,917	13,797	577,119	387,405	390	190	.....	.....	200	.....
New Hampshire	159,457	403	1,800	2,066	43,165	3,655	259,854	213,034	247	50	15	110	72	40
New Jersey	215,421	100	1,068	3,265	193,790	7,411	597,066	395,865	329	304	5	.....	20	128
New York	91,826	16,978	4,143	1,735	98,987	3,289	306,868	204,592	187	150	.....	.....	37	30
All other states[1]	224,559	2,648	36,660	4,189	345,950	16,243	1,041,416	679,223	425	50	15	.....	360	.....

[1] All other states embrace: California, 1 establishment; Illinois, 1; Michigan, 2; Ohio, 1; Oregon, 1; Pennsylvania, 7; and Rhode Island, 1.
[2] Owned power only.
[3] Includes rented power, other than electric.